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The Arris and Gale Lectures

ON

THE NEUROLOGY OF VISION.

Delivered before the Royal College of Surgeons of England on March 16th and 18th, 1904,

BY J. HERBERT PARSONS, B.S., D.SC. LOND., F.R.C.S. ENG.,

CURATOR, ROYAL LONDON OPHTHALMIC HOSPITAL; LECTURER ON PHYSIOLOGICAL OPTICS, UNIVERSITY COLLEGE, LONDON.

LECTURE I.

Delivered on March 16th.

THE AFFERENT VISUAL PATHS.

MR. PRESIDENT AND GENTLEMEN,—The nerves which deal with the special senses are specially differentiated sensory nerves. In the process of differentiation, however, the analogies which they present to the ordinary spinal sensory nerves are greatly obscured and may be easily overlooked. Just as the segmental arrangement of the central nervous system is most manifest in the cord, becomes obscured in the medulla oblongata, and is scarcely appreciable in the higher parts of the brain, so the cranial nerves assume that increased complexity which is characteristic of the evolutionary process wherever it occurs. Considering first the mechanism of transmission and transmutation of an ordinary sensory impulse we find that the physical stimulus is received by an end organ and is there transformed into a nervous impulse. This is carried by a nerve fibre along the sensory nerve and the dorsal spinal root to the cord. It travels up in the posterior columns of the cord to the nucleus gracilis or the nucleus cuneatus as the case may be. The whole of this course is along the processes of a single cell or neuron, which has been called the neuron of the first order. The impulse is taken up in the nucleus gracilis or nucleus cuneatus by a second cell and is carried along the nucleo-thalamic tract or mesial fillet to the opposite optic thalamus; other fibres, especially those derived from the nucleus cuneatus, pass to the superior colliculus or corpus quadrigeminum. These cells in the nuclei gracilis and cuneatus are the neurons of the second order. A third cell, the neuron of the third order, situated in the thalamus or colliculus, carries on the impulse to the cortex cerebri. Here the nervous impulse is transformed into a psychic impulse—a change which is not, and probably never can be, understood. This is the simplest path of an afferent impulse, though by no means the only one; it best serves our present purpose since it is the most typical.

Returning to the genesis of the impulse in some physical stimulus, there is, so far as we are aware, no preparation of the physical forces before they fall upon the sentient surface. This applies to all sensory nerves with the exception of the nerve of vision and, to a less extent, the auditory nerve. In the former case, with which we are immediately concerned, the whole eye, with the exception of the retina, is a complicated mechanism for preparing the physical force, light, so that it may produce specific and complex sensations. It is well, therefore, to emphasise the fact that in dealing with visual sensations the stimuli themselves are composite, and for all we know each component may be provided with its own transmitting apparatus.

At the outset of our comparison of the anatomical structures for the transmission of visual and common sensations we are met with difficulty. The so-called optic nerve is in no sense comparable with an ordinary sensory nerve. Morphologically and physiologically it is part of the brain. Careful investigation shows that the true optic nerve, corresponding with the sensory neuron of the first order, must be sought in the retina itself. Even so the analogy is not absolutely complete, for the dorsal root ganglion cell, which forms the first neuron, emigrates at an early stage of development from the neural crest and loses its connexion with the cord only to regain it at a later stage. The retina, on the other hand, develops entirely in the invaginated primary optic vesicle.

The morphology of the rods and cones.—If we seek the analogues of the successive sensory neurons in the optic system we are met with further difficulties. Histological investigations of the retina have shown that the conducting elements may be divided into three orders: (1) the rods and cones, with their nuclei, which form the main mass of the outer nuclear layer, and their processes which contribute to the outer reticular layer; (2) the rod and cone bipolars, which form the main mass of the inner nuclear layer with their axons, which contribute to the inner reticular layer; and (3) the ganglion cells, the axons of which form the nerve fibre layer, and the main mass of the so-called optic nerve. We shall see later that the ganglion cells and their processes behave exactly like the second order of sensory neurons, a fact which affords further evidence that the optic nerve belongs essentially to the central nervous system. The neurons of the first order therefore must be either the rods and cones or the bipolars. In the former case an extra neuron is intercalated in the visual afferent path; in the latter no such assumption is necessary, but it remains to explain the nature of the rods and cones. There can be no doubt that the second view is the simpler and more probable. If we adopt it the rods and cones will be epithelial ependymal cells corresponding with Merkel's *Tastzellen* or touch cells and the epithelial cells of end organs, with the neuro-epithelial cells of taste-buds, the epithelium of the organ of Corti, &c. The olfactory nerve will prove the sole exception to such a scheme, the sensory neurons of the first order being here situated actually upon the surface like the sensory cells of some invertebrata.

If we consider the position of the retinal pigment epithelium and the rods and cones from an embryological standpoint it will be seen that they correspond with the lining of the primary optic vesicle—i.e., with a part of the central neural canal. This is itself an invagination from the surface epiblast, and its lining epithelium therefore will correspond with the superficial epithelium of the body. In the neural canal these cells become ciliated ependymal cells, so that their condition in the retina is merely a specific differentiation. Evidence in favour of the ependymal nature of the rods and cones has been brought forward by Krause. This tends to show that the outer limbs are really coiled up cilia. Verhoeff, working with me in the laboratory at Moorfields, supports and extends this theory by further observations. If the rods and cones are ependymal cells we might reasonably expect to find the pigment epithelium also showing traces of the same origin. By bleaching and special staining methods—e.g., Mallory's phosphotungstic acid hæmatoxylin—a membrane, resembling the external limiting membrane, can be made out surrounding the internal ends of the pigmented epithelial cells. The appearance in transverse sections is that of a delicate line running along near the inner margins of the cells. The latter project beyond it in the form of processes of variable length, showing that the line does not represent the inner contour of the cells. Black dots occur at regular intervals along the line, each occurring at the line of junction of two cells. On careful focussing it can be seen that the line is not always at the same level, evidently passing sometimes behind and sometimes in front of the cells. Hence it is difficult to photograph the membrane. In oblique sections the true structure is made more apparent, the membrane appearing not as a straight line but as a series of hexagonal loops which are fused together at the lines of contact so as to form a screen into the openings of which the pigment cells project. The little dots are the points of junction of the loops—i.e., the sections of the lines of contact.

The following considerations are in favour of this structure being a true fenestrated membrane. In the first place, it does not correspond in position with the margins of the cells; secondly, with phosphotungstic acid hæmatoxylin followed by acid fuchsin it stains blue, whereas the cells stain pink or not at all and show no vertical blue lines between them; thirdly, in certain places where two neighbouring cells have shrunken apart it remains intact; fourthly, it can be frequently seen projecting beyond a fragmented part of the pigment layer; and, fifthly horizontal hexagonal loops may sometimes be seen even in unbleached specimens, the cells having fallen out. The membrane is not simply the cement substance or neurokeratin envelope which lies between the cells. This does not stain by the methods used, but on careful focussing a bright line or space can be made out between the cells. Staining reactions tend to show that

both this membrane and the external limiting membrane consist of a substance identical with, or closely allied to, neuroglia. Not only does the membrane of the pigment layer stain in the same manner as the external limiting membrane but the structure of the latter is the same. The component loops are smaller, since they surround the smaller rods and cones, but although the loops for the rods are particularly small each rod as well as each cone has its individual loop. For this reason the dots seen along the membrane in cross section occur at much more frequent intervals than in the pigment layer. The loops in the retina proper seem to be round, but at a short distance from the optic disc, where the rods and cones assume the form of short thick processes, the loops are unmistakably hexagonal. Another fact which demonstrates the intimate relationship of the two membranes is that in some parts, at any rate, they are continuous at the margin of the disc. This can only be explained by early fusion of the two layers after invagination of the primary optic vesicle is complete. It calls for further investigation from the embryological point of view. Further comparison with the ependyma of the central neural canal under similar conditions of staining, &c., is also desirable. The membrane can be well demonstrated in the so-called rosettes which are found in many gliomata of the retina. These bodies undoubtedly bear an intimate relation to the rods and cones. The membrane of the rosettes is a fenestrated structure similar in every way to the membrana limitans externa and to the membrane of the pigment layer. The loops are always hexagonal and of about the same size. It would take too long to discuss the bearing of these observations upon the generally received idea that the membrana limitans externa is formed by Müller's fibres—i.e., by neuroglia. Reference must be made to the original paper in the Royal London Ophthalmic Hospital Reports. Suffice it to say here that there is reason to think that neuroglia is absent in this situation in glioma retinæ.

There are other staining reactions which tend to show that the rod and cone cells differ essentially from the bipolar cells of the retina. In some specimens, more particularly in cases in which the nutrition of the retina has suffered from some cause, the rod and cone nuclei stain differently from the nuclei of the bipolars. This may be seen with the ordinary hæmatoxylin and eosin staining, but as shown by Verhoeff it is brought out much more clearly by Mallory's acid hæmatoxylin after hardening in 4 per cent. formaldehyde for four days or longer. The inner nuclear layers then remain unstained. The contrast between the two layers may be further intensified by staining for 24 hours in lithium carmine after differentiating in ferric chloride solution. The inner nuclei then take on the carmine stain. In some specimens only portions of the retina show this differentiation. It occurs most frequently in cases of detachment of the retina or choroiditis, but it also occurs in apparently normal retinæ. The condition is present also in the retina of the guinea-pig and in that of the frog.

The other theory—that the rods and cones are true peripheral neurons—is supported chiefly by observations on lower types. This has been shown particularly by van Lenhossek in cephalopods. Thus in eledone the retina consists entirely of complicated rod cells. From these the retinal fibres pass through the cartilaginous sclerotic to the visual lobe, which contains a peripheral or external nuclear layer, followed by a reticular layer, then an inner nuclear layer, and finally a layer of white fibres. These layers are themselves complex and until the morphology of the individual cells is more accurately determined the evidence in favour of the purely nervous nature of the rod apparatus is not overwhelming. Phylogeny, indeed, gives better support to the theory in the analogy of the ordinary sensory neurons of the first order, though here, too, the other interpretation is not disproved. In man the spinal ganglion cells are bipolar when first developed; only in the cochlear and vestibular ganglia is this condition retained through life. In the fish it is retained in all the posterior root ganglia. In invertebrates transition stages are found in which the cell body lies farther and farther from the central nervous system until finally, as in the earthworm, it is actually situated in the surface epithelium (Retzius). One vertebrate, amphioxus, has its bipolar sensory cells within the spinal cord, and some animals, in a comparatively limited space, show a number of transitional stages between the peripheral and the central position (Edinger). In only one undoubted instance in man the peripheral situation is maintained—viz., the peripheral olfactory neurons.

The neurons of the first order.—We pass on now to consider very briefly the neurons of the first order—viz., the rod and cone bipolars. Ramon y Cajal's work by a modified Golgi method has shown most clearly the relationship between the various cells of the retina. The bipolar cells come into relation peripherally by vertical dendrons with several rods. The dendrons of the bipolar cells for the cones lie in a deeper plane and are horizontal but similarly come into relation with several cones. The axons of the rod bipolars run centrally to the inner part of the inner reticular layer whilst the axons of the cone bipolars may form their arborisations at any of the five layers of the inner reticular layer. Over the greater part of the retina there are about 100 rods and cones to one ganglion cell. The fovea centralis has been investigated only in the bird and chameleon. In both cones alone are present; their axons end in knobs without fibrils or with only a pair of very short rudimentary fibrils. The dendrons of each ganglion cell in this region seem to come into relation with only a single bipolar and possibly several amacrine cells, so that here each cone has its own bipolar and ganglion cell—it remains, so to speak, "individualisirt" (Cajal).

The neurons of the second order.—The neurons of the second order, or the ganglion cells and their processes, will be considered at greater length. Their axons pass into the nerve-fibre layer of the retina, thence into the optic nerve; most cross in the chiasma to the opposite optic tract, some only passing along the tract of the same side; from both optic tracts most are distributed to the external geniculate bodies, whilst others pass to the superior colliculi, and yet others to the pulvinar of each optic thalamus. In man probably 80 per cent. pass to the external geniculate body (von Monakow). In lower animals the optic lobes—i.e., the region of the corpora quadrigemina—are the main visual organs. In fish almost the whole of the optic nerve ends in the midbrain; in birds there is a differentiation of a mesencephalic nucleus, the superior colliculus, from a diencephalic nucleus, the lateral geniculate body, and in them for the first time one meets with a genuine occipital cortex (Edinger). This anatomical differentiation is accompanied by a parallel redistribution of function and is therefore of prime importance in analysing the results derived from experiments upon animals.

Most of our knowledge of the arrangement of the fibres of the optic nerves, apart from the broad question of the relative amount of decussation in the chiasma, is derived from clinico-pathological investigation. I propose here to limit myself to a description of my own researches by the experimental method upon monkeys. Following the ordinary Wallerian law of degeneration, the afferent fibres of the visual paths degenerate on the central side of a lesion which separates them from their cells of origin, the ganglion cells. The method adopted was to introduce a Graefe cataract knife into the eye four or five millimetres behind the corneo-scleral margin at either the nasal or temporal side, thus avoiding dangerous injury to the ciliary body and minimising injury to the retina (the monkeys were of course completely anæsthetised). The knife was passed across the eye through the vitreous to the opposite side and the retina was wounded there to the required extent, the position of the point of the knife being in some cases observed by the ophthalmoscope (direct method). The ophthalmoscope was especially used in lesions near the disc or macula. In other cases the slight resistance encountered was sufficient to show that the retina had been reached. The exact position and nature of the wound were subsequently determined by ophthalmoscopic examination, which was repeated after an interval of a few days, and also shortly before killing the animal. The lesions were all investigated macroscopically by a suitable section of the eye post mortem and were then prepared for microscopic examination. The monkeys were chloroformed to death from a fortnight to three weeks after the operation. Great care was taken to preserve the accurate orientation of the nerves. The degenerations were examined by the Busch-Marchi method.

In Experiment I. a lesion about two millimetres long in a direction tangential to the disc was made near the equator in the lower nasal quadrant of the right eye. The main area of degeneration is wedge-shaped near the eye, the apex of the wedge being towards the centre of the nerve and the base at the periphery, the whole lying in the upper part of the inferior nasal quadrant. There are scattered degenerated fibres over the whole nasal side and a

few isolated ones upon the temporal side. In sections taken more posteriorly, behind the entrance of the central retinal vessels, the shape of the area occupied by the degenerated fibres becomes more crescentic but is still nasal. In the chiasma the fibres cross, principally in the inferior or ventral part. In Experiment II. a lesion about three millimetres long was made in a direction tangential to the disc a little in front of the equator in the lower temporal quadrant of the retina of the left eye. The main area of degeneration is on the temporal side along the whole course of the nerve. It is most marked and is very dense in the lower temporal quadrant, being more or less wedge-shaped near the eye and becoming rounder farther back. It tends to become more dorsal near the chiasma but it is possible that this may be due to slight error in orientation. There is some diffuse degeneration, most marked on the temporal side. The fibres lie principally in the dorsal part of the chiasma. Many degenerated fibres are seen crossing to the opposite tract. Farther back the fibres lie principally in the central part of the tract of the same side. Posteriorly they spread out and become more diffuse. In a similar area of the tract of the opposite side—i.e., dorsally and centrally in front, becoming broader behind—there are many finer black spots of degeneration. In Experiment III. a very small lesion was made upon the temporal side near the equator, just below the horizontal meridian of the left eye. The degeneration is almost limited to the inferior temporal quadrant and is very slight. In the chiasma it is at first ventral and anterior in position, gradually tending towards the dorsal surface. In the tract of the same side it is central and dorsal at first, becoming more diffuse posteriorly. There are only a few scattered fibres degenerated in the contra-lateral tract. In Experiment IV. the lesion was larger, about three millimetres long. It was on the temporal side of the right eye, a little behind the equator, and extended above and below the horizontal meridian. The degeneration is diffused over the whole temporal side of the nerve, without any special area of concentration. In the chiasma it occupies the central and dorsal parts. There are no fibres degenerated in the ventral part. In the tract of the same side the degeneration is arranged much the same as in Experiment II., but more fibres are affected. There is a finer scattered degeneration in the contra-lateral tract. In Experiment V. a small lesion was made between the macula and the disc but at a slightly lower level of the left eye. It was rather deep, injuring the choroid and sclera. In the anterior part of the nerve the degeneration was down and out; posteriorly it became more central. It occupied the central part of the chiasma and continued central and rather dorsal in the anterior part of the same tract, becoming more diffuse posteriorly. There was a large amount of degeneration considering the small extent of the lesion. This was probably due to its proximity to the disc and to its situation in the neighbourhood of the macula. There was fine degeneration in the contra-lateral tract, the fibres crossing in the central part of the chiasma. In Experiment VI. a lesion two millimetres long was made in a direction down and out from the fovea centralis of the left eye. In the anterior part of the nerve the degeneration is most marked on the temporal side, especially just below the horizontal; but there is also a considerable amount of degeneration over the whole area of the section. It is chiefly central in the anterior part of the chiasma; in the posterior part where the sections are more oblique—i.e., about half way between vertical and horizontal—it occupies a crescentic area at the periphery of each side with a connecting band in front. In this situation, therefore, the degeneration tends to become dorsal and external. Farther back, at the commencement of the tracts, there is degeneration in the central and slightly dorsal parts of each side and this becomes diffused over the whole tract more posteriorly.

These experiments agree, upon the whole, with some observations made upon rabbits by Pick and by Dean and Usher. They also confirm the results arrived at by pathological investigation of cases of toxic amblyopia, in which the papillo-macular bundle is particularly involved (Samelsohn, Nettleship, Uhthoff, Birch-Hirschfeld, and others). This disease, or rather group of diseases, has long been regarded as a form of retrobulbar neuritis. Recent investigations by the extremely delicate Nissl method, carried out principally by Birch-Hirschfeld, strongly support the view which I had already advanced from theoretical considerations that there is no true neuritis, but that there is degeneration, chiefly confined to the papillo-macular bundle, and in every respect comparable with those under discussion. They are due to the action of the toxic substances upon the retina. The degeneration in the nerve is actually caused by the destruction of some of the ganglion cells. Most of the toxic agents, whilst acting to some extent upon these cells themselves, act principally upon the terminal arborisations or synapses around them. It has been shown by Warrington that section of a spinal posterior root leads to degeneration of certain groups of cells in the anterior horns, probably by the removal of afferent impulses which are necessary for the nutrition of the cells. The same probably occurs in toxic amblyopias, the arborisations of the bipolars suffering most and causing degeneration of the ganglion cells. These diseases, therefore, afford good evidence of the course of the fibres from the macular region. Indeed, so far as their very limited application admits, they are better than the experimental lesions, for in the latter there is invariably some diffuse degeneration. This is not surprising, owing to the impossibility of absolutely controlling the amount of injury. The lesion made by the point of a Graefe knife is minimal, probably much less than by the galvano-cautery which was used by the other observers. It is, however, rarely possible to effect one's purpose without injury of the choroid or even the sclerotic and it is impossible to avoid entirely the retinal vessels. A slight amount of hæmorrhage into the vitreous usually occurs and the mere passage of the narrow knife across the eye must lead to reactive changes, probably accompanied by transient shrinking of the vitreous, which may well interfere with the nutrition of the ganglion cells in other parts of the retina. As might be expected, the nearer the lesion to the optic disc the greater is the resultant degeneration, for not only are the ganglion cells destroyed, but the axons of ganglion cells over a large peripheral area are also cut through. As these cells lie within the central nervous system no regeneration takes place; moreover, the time allowed is too short.

We see that, speaking generally, the fibres derived from various parts of the retina retain their relative position in the optic nerve—i.e., temporal fibres remain external, nasal internal, &c. The temporal fibres, however, tend towards the dorsal side as they approach the chiasma, and the nasal towards the ventral side. A further dislocation, affecting the temporal fibres most, occurs as the result of the intercalation of the papillo-macular bundle. It is probable that there is really some degree of variation in different individuals. Thus in the famous case reported by Ganser the uncrossed temporal fibres of the right side formed a separate and isolated bundle which passed to the ventral side of the tract of the same side and fused with it near the external geniculate body; and in the unique case figured by Vesalius there was no chiasma, the whole optic nerve running directly into the tract of the same side. The number of uncrossed fibres bears some relationship to the development of binocular vision and as this occurs late in the evolution of mammals slight variation is less to be wondered at than the extreme constancy which apparently obtains. I invariably found some degeneration in the optic nerve of the opposite side, an unexpected result which, however, confirms the work of previous observers. In all the specimens it was a diffuse degeneration, usually without very definite areas of concentration and always much less than on the injured side. The degeneration could be traced throughout the length of the nerve and such concentration of fibres as occurred retained its relative position in all the sections. As a rule it was on the homonymous side of the nerve, as compared with the side of the lesion. I have eliminated, so far as is possible, any error of technique which is further unlikely because all the degenerations were confined to visual paths, although much of the rest of the brain was examined.

There is one pathological examination which affords some support to the experimental result. Kellermann, in a case of old-standing atrophy of the left optic nerve, found a small tract of degeneration in the right nerve, ventro-lateral near the eye, becoming central near the chiasma and therefore running in the course of the macular bundle. No abnormality of vision was noticed during life and the central vessels entered the nerve at the inner and lower part, which is not invariably the case; hence the bundle ran independently of them. Kellermann attributes the degeneration to compression of the fibres in the chiasma, due to shrinking from atrophy of the fibres of the left nerve. Hebold in a similar case found the nerve sound, as shown by Pal's method, but this is not sufficiently sensitive for the purpose.

Usher and Dean suggest that fat may be removed from the degenerated nerve and carried by lymphatics and deposited in the opposite nerve. This is disproved by its absence in other parts of the nervous system, in spite of the innumerable researches carried out by the Marchi method. We are forced to conclude that the degeneration is a genuine one and, if so, what is the nature of the fibres involved? It is not probable, as Usher and Dean point out, that they are concerned in the pupillary reflexes, as these remain absolutely unimpaired. They must belong to some form of inter-retinal fibres—a reversion, in a sense, to the much-disputed inter-retinal tract (commissura arcuata anterior of Hannover, vordere Bogencommissur of Stilling). Ramon y Cajal has demonstrated by the methylene blue method in rabbits a division of the optic fibres and Kölliker discovered an isolated example in a human fœtus. Bernheimer was struck by the variety in size of the fibres in the chiasma, so that it appears in many places as if the larger fibres divided. It is not improbable that the degenerated fibres in the nerve of the uninjured side are collaterals and that they may be distributed to physiologically corresponding parts of the opposite retina, possibly inducing chemical changes in the visual substances or movements in the cells and so afferent impulses which subserve a modified type of binocular vision. These fibres would therefore be centrifugal fibres. That fibres which are undoubtedly centrifugal occur in the optic tracts and nerves was first proved by the Golgi method by Ramon y Cajal and has been confirmed since by other methods (van Gehuchten, Held, Kölliker, and von Monakow). They arise in the external geniculate body, the superior colliculus, and probably in the pulvinar of the optic thalamus. They end by arborisation in the inner reticular layer. Their functions can only be conjectured and are possibly those already suggested for the inter-retinal collaterals. In all of my experiments there was some degeneration in both tracts. This may be explained partly by the diffuse injury which probably always results from the lesion and which is manifested by diffuse degeneration in the nerve. I do not think that this accounts for it entirely. There are apparently more fibres degenerated in the tracts than in the nerve and we are here more powerfully forced to the conclusion that division of the fibres occurs. Most of the experiments were temporal lesions, with a view of obtaining, if possible, a pure degeneration in the homolateral tract. In these cases the degeneration in the contralateral tract usually showed smaller black globules, as if less myelin was present. Probably these were finer fibres—in fact, collaterals.

The basal visual centres and the neurons of the third order.—The optic tract runs round the cerebral peduncle and divides posteriorly into two branches—a lateral and a mesial. The lateral root contains the visual fibres and ends in the lateral geniculate body; the mesial joins the mesial geniculate body and consists of fibres which are not connected with vision.

The lateral geniculate body, in which the great majority of the visual fibres end in man, consists of alternating layers of white and grey matter. The grey matter contains the cell bodies and dendrons of the optic neurons of the third order. The white matter consists of the axons of the neurons of the second and third orders—i.e., the ends of the fibres from the optic tract and the beginnings of the fibres from the geniculate body to the cortex cerebri. The latter pass out laterally into an area situated on the outer side of the external geniculate body, known as Wernicke's field. Here they are joined by similar fibres from the superior colliculus and pulvinar, the latter being ventral to those derived from the geniculate body. They all turn round the caudate nucleus and enter the optic radiation of Graticlet. This forms a large sagittal bundle which passes backwards and upwards, outside the posterior horn of the lateral ventricle, to the occipital lobe. The fibres from the lateral geniculate body tend towards the neighbourhood of the calcarine fissure. They are well seen in Weigert sections of the brain of the newly born child, the other fibres being unstained, owing to their medullary sheaths not having yet developed (Flechsig). Flechsig thinks that the fibres from the geniculate body end exclusively in the calcarine fissure and represent the fibres from the macula. Other fibres from the optic tract pass into the pulvinar of the optic thalamus, which very much resembles the external geniculate body in histological appearance. The cells here, around which the fibres arborise, are also optic neurons of the third order. We have already referred to the relation of their axons—dorsal to those derived from the geniculate body. Their ultimate distribution is probably less localised, extending over a large area of the occipital lobe. The last group of fibres from the optic tract pass to the superior colliculus or corpus quadrigeminum. Although this has a complicated structure in man it is a mere rudiment as compared with its condition in the lower animals. Without going into the details of its structure in man it may be said that it consists of alternate layers of white and grey matter, the actual surface being covered by a thin layer of white fibres. The function of these is unknown; they do not degenerate after removal of the eye. The principal optic fibres enter the middle white zone, which is separated from the superficial white layer by the superficial grey layer or cappa cinerea (Tartuferi). Their terminal arborisations are around the cells in the superficial and also in the deeper grey matter. It is noteworthy that the deeper fibres pass to the region in which the fibres from the lateral fillet end. These ganglion cells of the superior colliculus are also optic neurons of the third order. A few of their axons pass to join the optic radiation, though this is doubted by some. Most of them pass down and bend round the grey matter surrounding the aqueduct of Sylvius, decussate with those from the opposite side beneath the third nuclei and the posterior longitudinal bundle, finally entering the posterior longitudinal bundle as they pass downwards towards the medulla. In their course they give off collaterals which pass to the opposite superior colliculus to the third, fourth, and sixth and probably to other nuclei. It is certain, at any rate, that they enter into intimate relation with the nuclei which govern the eye muscles, a fact which accounts for the mechanism of the eye muscle reflexes.

The effects of experimental destruction of the corpora quadrigemina are important. Most of the earlier observers—Flourens, Longet, McKendrick, Bechterew, Ferrier, and others—found a constant relation between the anterior lobes and the visual sense. The loss of vision following destruction depended upon the amount of decussation at the chiasma. In animals with total decussation—any below the rabbit, including the guinea-pig, birds, and fish—removal of one optic lobe caused blindness of the opposite eye. In animals with binocular vision heteronymous hemianopsia occurred, as Bechterew showed upon dogs; bilateral destruction produced complete blindness. More recent experiments on Testudo palustris (Fano) and birds (Stephani) show that the blindness is not complete. Nothnagel and Eisenlohr, from pathological data in man, found no interference with vision which could be ascribed to the corpora quadrigemina, and the later experiments of Ferrier and Turner contradict the earlier observation of Ferrier that complete blindness follows destruction of both superior colliculi in the monkey.

Confining our attention to primates, histological evidence all points to the dorsal and superficial layers as being most intimately connected with the visual afferent system, whilst the deeper layers are concerned with the ocular motor nuclei. Stimulation of the superior colliculus in monkeys causes, amongst other phenomena, widening of the palpebral fissures, elevation of the eyebrows, and conjugate deviation of the eyes to the opposite side, accompanied by a similar movement of the head and neck. These results may be attributed to spread of the current to the subjacent motor nuclei, but this is contra-indicated by the different effects obtained from the superior as compared with the inferior colliculi. Ablation causes temporary deviation of the eyes to the same side, lasting only a few hours. No ptosis or ophthalmoplegia follows as long as the lesion is not sufficiently deep to interfere with the third nuclei. The anatomical relations involve the removal of one occipital lobe, with consequent hemianopsia. Apart from this there are no visual effects which can be ascribed to the corpora quadrigemina.

We are forced to conclude that the superior colliculi are relatively unimportant as regards visual functions in primates, though they still probably retain some importance in the coördination of the ocular movements, acting principally as a reflex centre, receiving afferent impulses from the retinæ, the cortex, the acoustic-vestibular system, and the spinal sensory system through the fillet and cerebellum. These functions are too complex and too easily replaced vicariously to be elucidated by the coarse methods of experiment. As the size and importance of the mesencephalic visual nuclei diminish in ascending the animal scale, so the size and importance of the diencephalic nuclei—the lateral geniculate body and the pulvinar of the optic thalamus, both of which

must be regarded as nuclei of the diencephalon—increase. The pulvinar is large only in primates. Excitation of the thalamus produces very little result: ablation results in visual defects. A very important pathological observation was made by Hughlings Jackson in 1875. There was localised softening of the posterior part of the right optic thalamus; the visual defect consisted in left hemianopsia. Ferrier and Turner and Lo Monaco from experimental lesions found contra-lateral hemianopsia plus amblyopia of the whole field.

We are now in a position to realise the parallelism which exists between the nuclei under consideration and those belonging to the afferent tracts of common sensibility. The ganglion cell layer is found to correspond with the nuclei gracilis and cuneatus, whilst the termination of the optic tract in the superior colliculus and thalamus (lateral geniculate body and pulvinar) corresponds with the terminations of the nucleo-thalamic (mesial fillet) tract in the mesencephalon and diencephalon respectively.

Ramon y Cajal divides the optic path from these lower centres to the occipital cortex in two parts—a superficial and a deep. The superficial path, which is the less important, arises in the superficial layers of the lateral geniculate body and possibly from the stratum zonale of the thalamus. It curves towards the middle line, passing into the "central optic path" (Ramon y Cajal) of the cerebral peduncle. The deep path arises from the deep cells of the lateral geniculate body as well as from the stratum zonale and enters the central optic path on its mesial border. Some of the axons entering the central optic path undergo bifurcation, one branch ascending with the main bundle into the corpus striatum, the other descending towards the tegmentum. Ramon y Cajal suggests that the descending branches may represent a reflex path between the visual centres and the motor nuclei for the eyes, head, and neck. Ramon y Cajal succeeded in following the axons of the central optic path throughout their entire course from their entrance into the corpus striatum to their termination in the occipital lobe in the newly born mouse. He found that they were distributed to those areas of the cortex in which the white stripe of Gennari is best developed. This agrees with the embryological results obtained by Flechsig.

The cerebral visual centres.—Since the early part of last century it has been known that the cortex cerebri in the neighbourhood of the calcarine fissure possesses a characteristic structure owing to the existence in the centre of the grey matter of a white line which is easily visible to the naked eye. This has been variously termed the line of Gennari, of Vicq d'Azyr, or of Baillarger, after the original investigators. Since the earlier descriptions of Meynert, Krause, and Betz this region of the cortex has received special attention from Leonova, Hammarberg, Schlapp, Cajal, and most recently and most exhaustively from Bolton. According to the last-named author the calcarine or visuo-sensory cortex may be divided into the following layers: (1) outer layer of nerve fibres; (2) layer of small pyramidal cells; (3*a*) outer layer of granules containing pyramids; (3*b*) middle layer of nerve fibres or line of Gennari, containing the solitary cells of Meynert; (3*c*) inner layer of granules; (4) inner layer of nerve fibres containing the solitary cells of Meynert; and (5) layer of polymorphic cells. In the neighbouring visuo-psychic cortex the layers are: (1) outer layer of nerve fibres; (2) layer of small and large pyramids; (3) layer of granules containing pyramids; (4) inner layer of nerve fibres; and (5) layer of polymorphic cells. The third layer is therefore split up in the calcarine region by the intercalation of white fibres which undoubtedly represent the terminations of the tecto-pallial fibres.

I put before you illustrations showing the distribution of the visuo-sensory area in a previously healthy man, aged 55 years, who died from right lobar pneumonia. The results were worked out by Bolton with enormous labour and care by means of serial sections and micrometer measurements. The area occupies the whole of the body of the calcarine fissure extending above to the parallel cuneal sulcus and below to the collateral fissure. It occupies the posterior part of the calcarine fissure, extending round the pole to the outer surface of the hemisphere to a considerable extent, being surrounded at its postero-external extremity by well-defined sulci. Anteriorly it extends along the lower lip of the stem of the calcarine fissure almost to its anterior extremity. Bolton examined five other occipital lobes from various cases, one of which was a case of anophthalmia. He concludes from this research that the specific area is approximately pear-shaped with the apex anteriorly and the thick end at the pole of the hemisphere. In general distribution it occupies: (1) the body of the calcarine fissure, including the anterior and posterior annectants, and extending upwards to the parallel cuneal sulcus and downwards to the collateral fissure; (2) the posterior part of the calcarine fissure extending to the polar sulci surrounding its extremities; and (3) the inferior lip of the stem of the calcarine fissure (including the superficial surface and lower lip of the cuneal annectant) nearly to its anterior extremity, just posterior to which the area tails off to a sharp point. The area is much decreased in extent, but not in distribution, in cases of old-standing optic atrophy. In anophthalmia it is much contracted as regards both extent and distribution. It then occupies the usual position in the stem of the calcarine fissure but only extends backwards as far as the posterior cuneo-lingual annectant and it is confined to a portion of the inferior lip of the fissure and to the cortex between this and the collateral sulcus.

At the junction of the area of special lamination with the surrounding cortex the line of Gennari suddenly ceases. In the area itself the line is decreased nearly 50 per cent. in thickness in old-standing optic atrophy and the outer granule layer more than 10 per cent. On the other hand, in the cortex surrounding the area referred to old-standing optic atrophy causes no modification of the lamination. In anophthalmia the combined outer granule layer and line of Gennari are narrowed down to two-thirds of the normal thickness, the other layers of the cortex being approximately unchanged. This amount of narrowing is the same as that found in cases of old-standing optic atrophy. Hence it may be reasonably concluded that the area thus localised is the primary visual region of the cortex cerebri and that the part of this area to which afferent visual impulses primarily pass is the region of the line of Gennari. Bolton thinks that the area can probably be described as the cortical projection of the corresponding halves of both retinæ. In this projection the part above the calcarine fissure represents the upper corresponding quadrants and the part below the lower corresponding quadrants of both retinæ.

Ferrier first described the occipital lobes in various animals as being excitable and giving rise to movements of the eyes to the opposite side. In experiments with Yeo he found that destruction of the angular gyri in monkeys produced loss of vision of the opposite eye. This result has since been quite disproved by Schäfer and Sanger Brown and others, the explanation of Ferrier's results being probably the injury of the underlying fibres in the corona radiata passing from the occipital lobes. H. Munk first showed that removal of the occipital lobe alone in the monkey caused heteronymous hemianopsia—i.e., blindness of the corresponding halves of both retinæ with loss of the opposite halves of both fields of vision. All optical reflexes, with the exception of the pupillary reflex, were abolished. Munk tried to discover localisation within this visual area in dogs and monkeys by partial extirpations. He came to the conclusion that in the dog the upper part of the retina corresponds with the anterior part of the visual area, the lower with the posterior, the mesial or internal with the mesial or internal, and the lateral with the lateral. Central vision was most represented at the posterior pole. Schäfer and Sanger Brown came to the conclusion that in the monkey central vision is represented in the neighbourhood of the anterior part of the calcarine fissure. Schäfer considers that in the monkey and in man the whole of the visual area of one hemisphere is connected with the corresponding halves of both retinæ, that the upper zone of the visual area of one hemisphere is connected with the upper zone of the corresponding lateral halves of both retinæ, similarly for the lower zones, and that the focal point of the visual area, which is placed on the anterior part of the mesial surface of the occipital lobe, is connected with rather more than the corresponding halves of both maculæ. Pathological observations confirm these statements for the most part. Lesions of the occipital lobe produce hemianopsia without affecting the pupil reflexes. The fovea almost invariably escapes. Lesions of the mesial surface near the calcarine fissure produce the most serious disturbance for their size. Von Monakow limits the visual area to the cuneus, the lingual lobule, and the occipital gyri; all parts of the macula are represented in both hemispheres and over the whole visual cortex. According to Henschen the visual centre is confined to the neighbourhood of the calcarine fissure, the upper lip being connected with the upper quadrant of the

retina, the lower with the lower quadrant, and the macula with the anterior part of the area, each macula being represented on both sides.

As far as anatomical evidence goes it seems certain that most of the fibres from the lateral geniculate body end in the region of the calcarine fissure. According to Henschen all the visual fibres of the optic tract end in the external geniculate body, whence new fibres are carried to the calcarine fissure. Flechsig, too, finds the termination of the fibres of Gratiolet's radiation in the mesial surface of the occipital lobe and a small area close to the longitudinal fissure. On the other hand, von Monakow and others trace the thalamo-occipital fibres to the whole of the occipital cortex and possibly to the posterior part of the parietal lobe; those from the external geniculate body pass principally to the cuneus and lingual lobule. The idea that the macular region is represented only in the anterior part of the calcarine fissure is opposed by some pathological observations, so that Förster and Sachs consider the posterior part of the fissure the more probable. This view is similarly negatived by other cases, so that it seems probable that the whole length of the calcarine fissure is concerned in representation of the macula (Barker). Von Monakow assumes a wide distribution of the macular fibres in the external geniculate body, so that almost any portion of the occipital cortex is capable of receiving macular impulses. This view is opposed by cases of localised bilateral lesions of the occipital lobes, causing complete blindness, though in some of these there has been double hemianopsia with partial escape of central vision.

The Hunterian Lectures

ON

FRACTURES OF THE SKULL.

Delivered before the Royal College of Surgeons of England on Feb. 29th and March 2nd and 4th, 1904,

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SENIOR DEMONSTRATOR OF ANATOMY, ST. BARTHOLOMEW'S HOSPITAL.

LECTURE II.[1]

Delivered on March 2nd.

HÆMORRHAGES.

MR. PRESIDENT AND GENTLEMEN,—The various hæmorrhages that may result in skull fractures may be first classified into two main groups: (1) external hæmorrhages and (2) internal hæmorrhages. The first of the two groups may be subdivided into those hæmorrhages which result from basic fractures and those which are secondary to a fracture of the vault. The various extravasations into the tissues of the scalp would be included in the second subdivison, but as such hæmorrhages present but few points of new interest I do not propose, therefore, to discuss them further.

1. *External Hæmorrhages in Basic Fractures.*

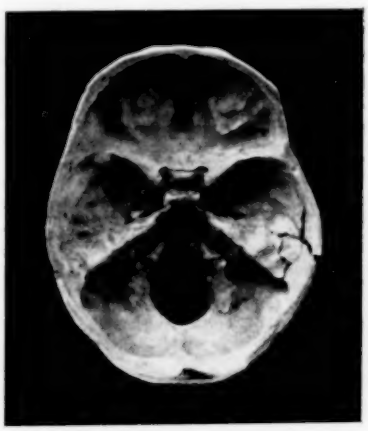
Hæmorrhage from the ear.—The great majority of fractures which involve the middle fossa of the skull originate laterally at the external auditory meatus and pass inwards from that region towards the sphenoidal sinus. Both the roof and floor of the external auditory meatus may be involved, but the fracture is generally most marked along the roof. From this region the fracture passes towards the anterior and internal angle of the middle ear, the membrane undergoing a variable degree of destruction in the path of the fracture. The degree of membrane laceration corresponds to the severity of the fracture and the exact nature of the forces producing the fracture. For instance, if the fracture extends from the vault downwards to the base (Figs. 9 and 10) the membrane is generally torn in its upper and anterior part only, whilst if the fracture results from a direct blow on the auricular region the osseous injury is more extensive and the degree of laceration is added to by the forcible in-driving of air, whilst in the most severe cases the drum destruction is complete. The malleus and the incus undergo varying dislocations, but the stapes rarely undergoes any change in position. The blood which escapes from the ear will be seen to be derived from the lacerated cuticle lining the roof of the external meatus and also from a deeper region. Hæmorrhage is sometimes so profuse that one is quite unable to determine the exact source, but in favourable cases an otoscopic examination will reveal that the blood comes from the anterior and upper region of the tympanum, not so much from the torn drum itself but welling up fast through the gap in the drum. Post-mortem examination in such cases shows that the middle ear is full of blood derived from those torn tympanic vessels which, supplying the mucous lining and bony walls of the middle ear, lie in the path of the fracture.

FIG. 9.

A fracture extending downwards from the vault to the base and involving the ear. The vault has been sawn through horizontally.

The amount of blood lost varies greatly. The escape may be profuse and may be continued for hours and even days, whilst in other cases there may be merely sufficient extravasation to clot and to dry up in the external meatus. I have had the opportunity of seeing several cases that throw light on the main causes which influence the amount of blood lost. The first case which drew my attention to the subject was as follows. A man was admitted with a wound on the right side of the head, the result of a fall, and with profuse hæmorrhage from the right ear, which lasted till death ensued, 14 hours later. The patient presented no symptoms pointing to extradural hæmorrhage, yet at the

FIG. 10.



Internal view of skull shown in Fig. 9. An extensive fracture of the middle fossa is present.

[1] Lecture I. was published in THE LANCET of April 9th, p. 973.

post-mortem examination a very extensive hæmorrhage from the middle meningeal artery was found, whilst the tegmen tympani was markedly comminuted, the blood having a free means of escape into the middle ear and so externally through the lacerated membrana tympani. On going into the question, in subsequent cases, I observed (1) that hæmorrhage from the middle meningeal artery is very much more common than is generally supposed to be the case, the slighter forms yielding no clinical symptoms; and (2) that the fissures running across the tegmen tympani are usually of such a nature that blood can be forced through them into the middle ear.

It should also be pointed out that the extradural extravasation exercises a great mechanical pressure, and that as the extravasation increases so in direct ratio does the pressure exercised by it on the surrounding structures also increase. Relief, therefore, takes place in such cases by the passage of blood into the middle ear and through the torn membrana tympani. I regard, therefore, profuse and continuous hæmorrhage from the ear as very suggestive of an accompanying extradural hæmorrhage and although it is, perhaps, too much to advocate trephination over the artery in all such cases yet I am strongly of the opinion that such a method is advisable when the general conditions are grave, even in the complete absence of the typical symptoms of middle meningeal hæmorrhage. It is hardly necessary to add that the closure of the external meatus with a plug of gauze kept in position with wool and bandage is the worst possible treatment, and I have seen, at any rate, two cases where such methods quickly resulted in an increase of compression symptoms and in accelerated death. Both these cases presented on later examination all the features I have alluded to. The application of a plug in the meatus may, perhaps, be used for diagnostic purposes, the patient being carefully watched and any alteration in the symptoms pointing to pressure over the motor area promptly treated by trephination.

It will be of interest to narrate briefly a somewhat similar case reported by Chassaignac.[2] A man after falling down an area had continuous hæmorrhage from the ear lasting for three days. He kept to his bed but on the third day, feeling otherwise well, he got up and walked briskly to consult a "wise woman." On returning he complained of fatigue and headache, the hæmorrhage now having ceased. He became delirious and died. The examination showed an extensive fracture of the petrous bone with laceration of the lateral sinus and a great extravasation from a ruptured middle meningeal artery. The blood poured out had escaped freely for three days, the passage had then become blocked, and death resulted. In stating, therefore, that free hæmorrhage from the ear suggests strongly an extradural hæmorrhage from the middle meningeal artery it should be added that the blood may be derived from a lacerated venous sinus, this latter condition being, however, much more rare than the former.

Hæmorrhage from the ear does not, of course, necessarily imply the existence of a basic fracture. The membrane alone may be ruptured as the result of a blow on the ear. The resultant hæmorrhage is, however, seldom profuse and the absence of any further symptoms will soon clear up the diagnosis. From my own experience, however, I think that too much stress is laid on the fact that hæmorrhage from the ear results from other causes than a basic fracture and I regard this symptom, when secondary to a blow on the head, as practically diagnostic of the particular fracture of the middle fossa to which I have alluded. In some few cases hæmorrhage occurs from both ears, usually as the result of a bilateral compression, the fracture running from one external auditory meatus to the other, involving both tympanic cavities and the body of the sphenoid in the middle line. In these cases also the fracture frequently extends on either side up on to the vault in such a manner that the skull is practically divided into two parts, merely united by the soft structures. The prognosis in these cases is necessarily grave but the marvellous vitality of young adults enables them to recover even in such adverse circumstances.

Hæmorrhage into the nasal cavity and into the naso-pharynx.—Hæmorrhage into one or both of these cavities is one of the most constant symptoms in fractures of the base, for it occurs in nearly all fractures involving either anterior or middle fossæ. The post-mortem lesions found in these cases are comminuted fractures of the cribriform plate of the ethmoid and of the sphenoidal body.

I have already pointed out that most anterior fossa fractures traverse the cribriform plate of the ethmoid, a fairly free hæmorrhage resulting from lacerated ethmoidal arteries, whilst the very great majority of fractures of the middle fossa tend to pass through the sphenoidal body. Now this sphenoidal body, which is in reality one of the weakest of the basic areas, consists of a mere shell of body inclosing the air sinus and bounded laterally by the cavernous sinus, on the outer side of which the internal carotid artery runs. The liability of this region to injury is so marked that although a fracture passing along the anterior border of the petrous bone may tail off before reaching this region, yet in many cases the conducted forces suffice to bring about an extensive fracture on reaching the sphenoidal body. These fractures are generally comminuted, both roof and floor of the sinus being equally damaged in such a manner that a probe may be passed from the cranial cavity into the naso-pharynx below. The comminuted sinus wall punctures or tears the cavernous sinus, profuse hæmorrhage resulting, whilst in the most severe cases the internal carotid artery itself may be completely torn across. In the only two cases that I have seen where the carotid artery was torn blood poured into the naso-pharynx, gushed from the mouth in streams, and death resulted almost immediately.

Hæmorrhage into the orbital region.—The results produced are: (1) paralysis of the muscles, both from actual mechanical impediment to movement and from pressure on the nerves supplying the muscles; (2) subconjunctival hæmorrhage; (3) palpebral and peri-palpebral hæmorrhage; and (4) proptosis. The muscular paralyses will be alluded to under "nerve implication"; the other symptoms need, however, further reference.

Subconjunctival hæmorrhage.—Hæmorrhage beneath the conjunctiva nearly always makes its appearance at the outer canthus of the eye, progressing inwards towards the corneo-scleral margin. In the more marked cases the extravasation may completely surround the cornea, bulging forwards so as almost completely to obliterate the field of vision. Even in these cases, however, the hæmorrhage is most extensive at the outer canthus. When combined with some degree of proptosis, the probable fracture present is one which involves the region of the sphenoidal fissure, with implication of the anterior part of the cavernous sinus. When no proptosis is present the fracture is commonly due to a blow in the temporal region involving the outer orbital wall.

Palpebral and peri-palpebral hæmorrhage.—Hæmorrhage into the eyelids and into the loose connective tissue surrounding the lids is seen in most cases of anterior fossa fractures. It frequently coexists with subconjunctival hæmorrhage but the two are not necessarily present together. It differs from subconjunctival hæmorrhage in its site of early origin, for palpebral hæmorrhage nearly always begins at the inner angle of the eye, progressing outwards into the tissues of the upper and lower lids and into the surrounding regions. The extravasated blood may be wholly anterior to the tarsal and ligamentous structures of the lids, in which case the fracture usually involves the perpendicular plate of the frontal bone only. More commonly, the fracture extends along the orbital roof, perhaps involving the sphenoidal sinus, in which case palpebral hæmorrhage, subconjunctival hæmorrhage, and proptosis may all three be present together.

Proptosis.—The time at which proptosis first becomes evident and the degree to which it progresses are both very variable. One can, however, tabulate these cases roughly into three main groups and from them draw certain conclusions as to the probable nature of the injury present.

1. Proptosis severe, appearing almost at once, and progressive.	1. A severe fracture in the region of the sphenoidal fissure and cavernous sinus with extravasation of blood forwards into the retro-ocular tissues. Thrombosis of the cavernous sinus may coexist and in the most severe and progressive cases there may be some damage to the internal carotid artery.
2. Proptosis moderate and appearing after a few hours.	2. A fracture involving the orbital walls, the extravasated blood being derived from lacerated ophthalmic vessels.
3. Proptosis appearing days or weeks after the injury and usually steadily progressive.	3. A fracture involving the region of the cavernous sinus with injury to the internal carotid artery and with the formation of a fistulous communication between the sinus and the artery.

[2] Plaies de la Tête. 1842.

I have alluded several times to the sphenoidal fissure as a region which, when involved, may result in fairly extensive hæmorrhage. I should remind you, perhaps, that the orbital branch of the middle meningeal artery runs forwards to the orbit at the outer angle of the fissure and that this vessel is commonly injured in all fractures involving this region, adding, therefore, to the blood extravasation which results from fractures involving this region.

Hæmorrhage into the mastoid and occipital regions.—In fractures of the posterior fossa the blood poured out has but little chance of making itself evident owing to the dense mass of muscles and fasciæ which overlie that fossa. The resistance offered by these structures tends to confine the extravasated blood to the cerebellar fossæ, adding consequently to the already grave prognosis of fractures in this region. Sometimes careful palpation will detect a "doughy" or "boggy" condition of the tissues and ecchymosis may appear later from the extravasation of blood upwards on to the vault and downwards into the neck. A peculiar ecchymotic patch is frequently seen, appearing first in front of the apex of the mastoid process and travelling upwards in a curved direction, concavity forwards, following the outline of the external ear. This ecchymosis is said to result from the tracking of blood upwards along the course of the posterior auricular artery. In all the cases that I have seen this condition was associated with a separation along the occipito-mastoid suture and although this suture and the line of the hæmorrhage do not quite coincide there must, I think, be some connexion between the two. Before passing on to the subject of intracranial hæmorrhages I wish to return to the subject of

"*Orbital aneurysm.*"—The first complete account of this complication was given by Rivington in 1875.[1] I have collected 20 further cases, in all of which the history and other symptoms strongly indicated the previous existence of a basic fracture. 16 of these cases were males and four were females. The average age of the males was 22 years and that of the females was 33½ years. The injury consisted of blows or falls on the head in 18 cases and of punctured wounds of the orbit in two cases.

I will pass over most of the more important subjective and objective symptoms, confining myself mainly to the question of treatment. In discussing this, however, it is necessary to pick out one or two of the more important symptoms so as to obtain some record as to the way they are affected in the various methods adopted. Proptosis is usually the first symptom to appear and many patients come for advice complaining of nothing more than some prominence of the eyeball, combined usually "with noises in the head," compared to the whirring of machinery, the buzzing of bees, or the thud of a steam-hammer. This proptosis generally appears during the second month, though occasionally its onset is much earlier, and in one case was not noticed till nearly a year after the accident. The eyeball is dislocated downwards and outwards, the main pulsating tumour occupying the upper and inner angle of the orbit. All the main symptoms were diminished by compression of the common carotid of the affected side and the symptoms steadily increased in most cases when no treatment was adopted, the globe being pushed further and further out of its socket, even on to the cheek. The cornea sloughed and the eye was completely destroyed. Repeated and profuse hæmorrhage will ultimately lead in these cases to a fatal result. In some few cases the symptoms remained quiescent, whilst in others expectant treatment resulted in marked improvement. The treatment adopted in these 20 cases was as follows. 1. In 12 cases the common carotid was tied with a primary ligature in six cases and with a secondary ligature after failure of other methods in six cases. The result was great improvement in all. 2. In four cases no treatment was adopted beyond rest, &c., combined with the administration of sedatives and of iodide of potassium in large doses, with the result that two improved in their general condition, one remained *in statu quo*, and the fourth case was unable to be traced. 3. In ten cases digital or instrumental pressure on the common carotid was tried first, with the result that three showed marked improvement, one remained *in statu quo*, whilst in the other cases, either on account of the pain produced or from failure to obtain any satisfactory result, the common carotid was ligatured, in each case with an immediate successful result. The actual method of compression adopted varied in the different cases; in some a continuous mechanical pressure was used by means of an instrument, whilst in others an intermittent digital method was tried. In one case continuous pressure was adopted for one month and in another intermittent pressure was used for ten weeks, and in each case the result was a complete failure to produce a successful result. In the 12 recorded cases where the common carotid was ligatured the result obtained was an immediate success, the main aneurysmal symptoms rapidly disappeared, the pulsation ceased, the proptosis diminished, and the patients were later able to return to their former occupation. In one case only, however, was there a complete return to the normal, for in all the others some permanent defect in vision remained, due mainly to the previous stretching of the parts, and in two cases the operation was not carried out sufficiently early to prevent some sloughing of the cornea. The noises in the ear, also, though much diminished, occasionally remained permanently.

The conclusions to be drawn from these cases, according to the method adopted, are as follows: 1. By means of rest, &c., the progress of the disease may be arrested and marked improvement may result. 2. Compression, digital or instrumental, intermittent or continuous, is painful, tedious, and uncertain as to its result. 3. Ligature of the common carotid will almost certainly greatly improve the local conditions and will probably effect a cure, and the earlier the ligation is performed the greater is the chance of reducing to a minimum the subsequent corneal sloughing, &c. No cerebral disturbances need be feared as a result of tying the common carotid unless as a result of the original injury some laceration of the same side of the brain be present. In such cases it is best to accustom the brain to its future condition by some "preparatory" form of treatment as could be brought about by occasional intermittent pressure before the more radical treatment.

Post-mortem evidence of the lesion present.—Three of Rivington's cases showed a direct communication between the internal carotid artery and the cavernous sinus. In the 20 subsequent cases which I have collected an examination was only held in one and in this case the artery communicated with the sinus by two rounded holes through which the arterial blood was pumped into the cavernous sinus. A united fracture of the petrous bone ran inwards towards the sinus.

The basic fracture peculiar to these cases.—I have previously pointed out that in basic fractures, wherever the injury may be received, the body of the sphenoid, forming one of the weakest of the basic areas, is especially liable to injury, and I shall show later two specimens where the internal carotid artery was lacerated in this region. The exact line of the fracture is not stated in the majority of the recorded cases, but putting all the facts together it appears probable that when orbital aneurysm results from a blow on the head the most common fracture producing such a result will be one which travels along the anterior border of the petrous bone to the cavernous sinus, injuring the internal carotid artery as it runs forwards along the outer part of the cavernous sinus.

2. *Internal Hæmorrhages.*

According to the relation of the extravasated blood to the meninges and cerebrum these hæmorrhages may be classified in the following groups: (1) extradural; (2) intradural; (3) cortical; and (4) intraventricular.

Extradural hæmorrhage may be arterial or venous, in the former case the blood being derived almost exclusively from the middle meningeal artery. A purely venous extradural hæmorrhage is occasionally seen in connexion with fractures of the posterior fossa, in those rare cases where the lateral sinus is mainly torn on its outer aspect. The extravasated blood is unable to find any means of escape owing to the dense mass of muscles attached to the occipital bone, and as the dura mater is in this region but loosely applied an extensive extradural clot results. The middle meningeal artery and its numerous branches are necessarily very liable to injury in all fractures involving the temporal region and the middle fossa of the skull, the anterior branch of the artery being especially liable to such injury. The anterior branch may be torn in the temporal region and so secured with comparative ease, whilst in other cases the main artery, or one of its branches, may be cut across low down in the basic fossa by a fracture travelling obliquely across the middle fossa. In these cases no ordinary trephination will suffice to reach the bleeding point. In the great majority of cases the vessel is lacerated on the same side as that on

[1] Transactions of the Royal Medical and Chirurgical Society, vol. lviii.

which the injury was received, but occasionally the hæmorrhage occurs on the opposite side and is not necessarily associated with a corresponding basic fracture. Such cases are almost confined to late life, when the arteries are atheromatous. English records three cases, all of which were fatal, where both vessels were injured.

Uncomplicated middle meningeal hæmorrhage is rare and the coexistence of a fracture of base or vault, with the addition of brain laceration, renders a correct and early diagnosis exceedingly difficult and often impossible. I have previously pointed out that the pressure effects depend to a large extent on the presence or absence of a safety valve such as is afforded by the existence of a comminuted fracture of the tegmen tympani, allowing of the escape of blood into the middle ear and so externally through the gaps of a lacerated drum. A safety valve is also provided in those cases where the meningeal hæmorrhage is associated with a comminuted fracture of the temporal fossa walls, in which case the extravasated blood escapes into the temporal muscle, leading to swelling, ecchymosis, and even pulsation in that region. Compression of this temporal hæmatoma results in an increase of the general compression symptoms and also occasionally leads to twitchings, &c., of the muscles of the opposite side of the face and body. The amount of blood extravasated varied in the different cases from one drachm to several ounces, the largest coagulum being four and a half inches in diameter and one inch thick. The clot, partly fluid and partly jelly-like, is easily removed, except on the dural aspect where it adheres, the removal of the clot leaving the dura mater rough, fibrinous, and discoloured. The dura mater is firmly adherent along the upper border of the temporal bone and also along the lesser wing of the sphenoid, whilst the intervening portion is but loosely attached to the underlying bone of the middle fossa. The blood first poured out has a comparatively easy task in lifting up this loosely applied dura mater, but though exercising an ever greater mechanical pressure as the size of the clot increases, yet it has now to meet insurmountable difficulties in front, behind, and on the inner side, with the result that the blood forces its way upwards towards the convexity of the brain.

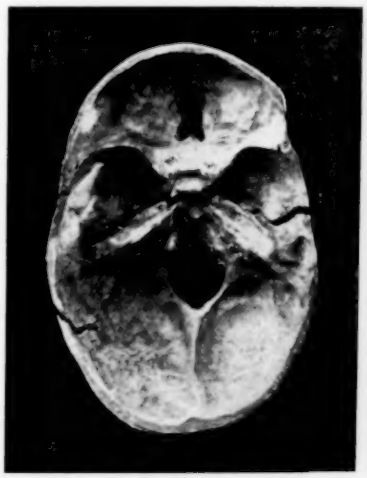
Krönlein divides middle meningeal clots into three main varieties, according to the area of brain mainly compressed: (1) temporo-parietal (the commonest); (2) parieto-occipital (rare); and (3) parieto-frontal (very rare). The great difficulties which arise in the diagnosis of an extradural hæmorrhage are evidenced by the following group of cases. An extradural hæmorrhage, of a greater or lesser degree, was found in 30 per cent. of all cases where a post-mortem examination was held and a previous diagnosis was made in 9 per cent. of cases only. The question at once arises as to what are the most important and most suggestive features indicating the probable presence of such a hæmorrhage for the typical symptoms are generally obscured by the presence of other lesions. From my own experience I should put the suggestive symptoms in the following order, according to the frequency of occurrence: (1) the presence of a temporal hæmatoma; (2) a copious and continued hæmorrhage from the ear; (3) twitchings of the facial muscle of the opposite side and twitchings or spasticity of the muscles of the opposite arm and leg; (4) a brief lucid interval between the stages of concussion and collapse; and (5) some alteration in the pupil of the affected side, more commonly a "constricted" pupil. The dilated or Hutchinson pupil is, according to my experience, but rarely seen, except in the later stages, when its diagnostic value is of less importance as the "crisis" is passed. Hutchinson concluded that the dilated pupil was the result of direct pressure on the third nerve. Against this view two points may be urged: (1) no other symptoms pointing to pressure on the nerve are present nor are any of the accompanying nerves involved; and (2) the hæmorrhage would need to overcome almost insurmountable difficulties in order to lift up the dura mater as far as the outer wall of the cavernous sinus. Pagenstecher and H. P. Dean have also shown that localised compression on the cortical motor areas affects the pupil of the same side, producing first constriction and later dilatation of the pupil. The pupil changes are therefore probably cortical in origin. The temperature, the respiration, and the pulse are so variable that no dependence can be placed on them.

In trephining it is necessary to operate at the earliest possible moment and in doubtful cases it is better to operate and to find no hæmorrhage than to defer any radical treatment till too late. It is frequently necessary to chip away the bone towards the base, as the artery is often torn, low down in the base, soon after the bifurcation. If all local measures fail to reach the bleeding spot it will be necessary to tie the common or external carotid artery. Liddell, in the *American Journal of the Medical Sciences*, reported two cases where it became necessary to ligature the common carotid artery, the result being in each case successful. It is, however, probably advisable to tie the external carotid in preference to the common carotid artery, the brain being already compressed and probably lacerated and any further interference with its blood-supply may lead to serious early and remote cerebral changes.

Prognosis.—This is best illustrated by the 257 cases collected by Weismann. In 110 cases operated on the mortality was 27 per cent. In 147 cases not operated on the mortality was 88 per cent. In estimating the value of early surgical treatment in connexion with these statistics it must be borne in mind that the majority of the fatal cases not operated on were probably inevitably fatal, owing to the presence of other lesions of the skull and the brain. Weismann's cases would have been of greater value if they were grouped after Jacobsen's plan: (1) hopeful cases; (2) less hopeful cases; and (3) cases hopeless from the first.

Injury to the internal carotid artery.—This vessel, during its passage forwards and inwards towards the posterior clinoid process, lies behind the ordinary fracture which passes across the middle fossa, but as it passes forwards in the outer wall of the cavernous sinus towards the anterior clinoid process it crosses the line of fracture from one middle fossa to the other. Although it is loosely imbedded in the sinus wall, protected by nerves on its outer side, and situated well above the basic level, yet it is in this part of its course that it is liable to injury. I shall show you two such cases,

FIG. 11.



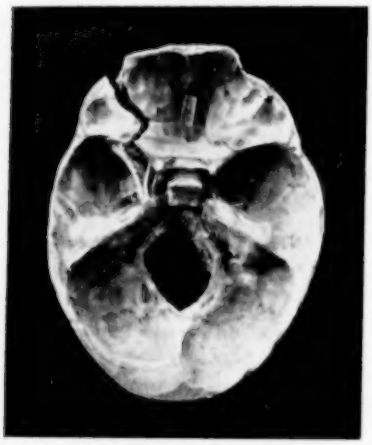
An extensive fracture passing through the sphenoid from one middle fossa to the other.

one in which both vessels were completely torn across, a fracture passing from one middle fossa to the other with such marked separation of the anterior and posterior segments of the skull that the two parts were freely moveable, one against the other (Fig. 11), whilst in the second case a fracture, originating in the left frontal region, passed backwards across the anterior fossa to the sphenoidal region widely separating the left middle fossa from the body of the sphenoid, lacerating the left cavernous sinus and partially tearing through the corresponding carotid artery (Fig. 12). Death in each case was nearly instantaneous, blood gushing from the mouth and the nose. The injury to the artery may be in other cases so slight that a fistulous communication between the artery and sinus results, with the formation of an orbital aneurysm.

Hæmorrhage from venous sinuses.—Two of the cerebral venous sinuses are placed in such a situation that they incur

special liability to injury. These are the cavernous and the lateral sinuses. Enough has been said with regard to hæmorrhage from the former sinus under the headings of nasal, naso-pharyngeal, and orbital hæmorrhage. The lateral sinus may be laid open in any part of its course, the rent being almost always more extensive along the inner and unprotected wall. The resultant extravasation is mainly

FIG. 12.



A fracture passing from the anterior fossa through the middle fossa.

intradural, the blood gravitating first into the cerebellar fossæ and only secondarily tending to be diffused over the cerebral cortex. The torcula generally escapes injury as the fracture avoids the occipital protuberance and chooses the weaker lateral region. The most common site of laceration is, however, at the angle of junction between

FIG. 13.

Showing rupture of the venous sinuses.

the sigmoid and the lateral sinus. This part corresponds to the occipito-mastoid suture and separation along the line of this suture is a frequent sequel to blows received in that region. The degree of separation is frequently great and this, combined with the dural transmission of the forces, suffices extensively to lacerate the inner unsupported sinus wall. In the specimen shown (Fig. 13) both sinuses were torn in this situation and besides an extensive intradural extravasation the extradural hæmorrhage was so marked that the dura mater lining the posterior fossa was stripped up throughout its whole extent, from the internal occipital protuberance to the margin of the foramen magnum. The special symptoms produced by such extensive intradural venous hæmorrhage are impossible to specify, for the injury in most cases is of such a nature that the patient dies almost at once or is when seen in a moribund condition, owing mainly to the early implication of the vital medullary centres.

Hæmorrhage into the subarachnoid and subpial regions.—In most cases of severe head injury hæmorrhage occurs in these situations and on reflection of the dura mater a blood film is seen, of variable extent and thickness, extending over the cerebral cortex and dipping down into the major and minor sulci. When localised it is most commonly situated over that part of the brain which lies directly opposite to that part of the skull at which the injury was received and it is produced by the impact of the brain against its bony barrier. When situated over a motor area the symptoms vary according to the position and extent of the hæmorrhage. When slight in extent symptoms of irritation result, with severe localised headache, contracted pupils, and some spasticity of the regions supplied by the affected area. When more severe localised twitchings may result from the irritation of a particular motor area, the muscular movements involving one part after another as the effused blood becomes more diffused. The twitchings may subsequently give place to a spastic condition, but actual paralysis is rare, such a condition generally indicating some cortical laceration.

Intraventricular hæmorrhage.—Hæmorrhage into the lateral, third, and fourth ventricles is only seen in the most severe cases, and death generally results early. Symptoms resembling those seen in apoplexy are said to result.

THE ESCAPE OF CEREBRO-SPINAL FLUID FROM THE NOSE AND EAR.

This symptom occupies in text-books so prominent a position that one is led to the belief that a discharge of cerebro-spinal fluid from the ear or from the nose is of common occurrence. Such, however, is not my experience. The escape of a clear or slightly blood-stained fluid does not necessarily imply that the fluid is cerebro-spinal in nature, for it has been proved on numerous occasions that watery fluid may escape in considerable quantities from the ear or from the nose without the existence of any basic fracture, the fluid in such cases being derived either from the membranous labyrinth (the liquor Cotunnii) or from the mucous membrane of the ear or nose as a result of the great vaso-motor dilatation of the tympanic and nasal vessels. If the fluid be cerebro-spinal in nature the natural inference is that the subarachnoid space is opened up to the exterior, either directly or indirectly along the course of a cranial nerve. A chemical examination of the fluid may help in the diagnosis since the two fluids differ appreciably in composition.

1. *Cerebro-spinal fluid* is rich in chlorides, contains little or no albumin, and a trace of a reducing substance allied to pyrocatechin.

2. *Fluid derived from other sources* contains chlorides, a fair amount of albumin, and no reducing substance.

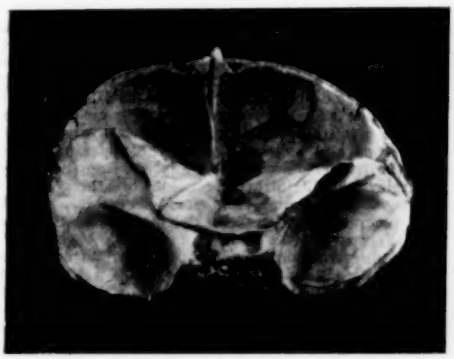
Certain factors, however, enter into the case which neutralise the advantages of a chemical analysis, for even though the fluid be cerebro-spinal in nature it is frequently mixed with blood, with the consequent addition of albumin, whilst if the fluid be profuse in amount the first part only contains any reducing substance, the fluid soon becoming a mere serous exudation. I have several times been able to collect a clear fluid from the ear, drop by drop, in a test-tube, and I have generally failed to demonstrate the presence of this reducing agent, though the post-mortem examination evidenced later that the fluid was derived from the subarachnoid space. The fluid is almost certainly cerebro-spinal in nature: (1) if the discharge begins within 24 hours of the accident; (2) if the discharge is colourless and profuse; and (3) if the discharge continues for some days. The time of onset, the duration, and the quantity are all, however, subject to great variation. 1. The time of onset is usually early, but cases are recorded where the discharge began weeks after the accident. 2. The duration may be from a few hours to many weeks. Sir W. Savory recorded a case where fluid escaped for one month from both ears. 3. The quantity varies from a few ounces to several pints. Sir

William MacCormac described a case in which three pints escaped in five hours.

This occasional great loss of fluid is due to the fact that as the cerebro-spinal fluid escapes the pressure in the subarachnoid space is practically reduced to zero, and since the cerebro-spinal tension and the intracranial venous pressure are equal fluid continually passes from the veins into the subarachnoid space as long as the cerebro-spinal fluid escapes.

Cerebro-spinal fluid from the nose.—Blandin, of the Hôtel Dieu, first drew attention to this symptom in 1840. The gross lesion most commonly present is a comminuted fracture of the cribriform plate of the ethmoid, with laceration of the overlying dura mater and arachnoid (Fig. 14). More rarely the fluid may be derived from the cisterna basalis, the fracture involving the sphenoidal body with laceration of the overlying membranes and with comminution of both roof and floor of the sinus. Goucard and Malgaigne both describe

FIG. 14.



The crista galli with a fracture passing through the cribriform plate on the right side.

cases where, as the result of a severe fracture of the petrous bone without injury to the membrana tympani, the fluid escaped forwards into the naso-pharynx along the Eustachian tube.

Cerebro-spinal fluid from the ear.—This was first recorded by van der Wiel in 1727, and more completely by M. Langier in 1839. The source of the fluid is usually stated to be as follows: "The fracture involves the petrous bone in such a way that the arachnoid and dural sheaths round the seventh and eighth pairs of nerves are torn, allowing the cerebro-spinal fluid to escape into the middle ear, and so externally through a torn membrana tympani." The great majority of fractures which involve the petrous bone pass in front of the genu of the seventh nerve and in front of the eighth nerve and internal ear. Some further lesion is therefore necessary, and it will be found that two main varieties of fracture may lead to aural discharge of cerebro-spinal fluid. 1. A fracture of the middle fossa, with such comminution of the petrous bone that the subarachnoid space is opened up, either directly by laceration of the dura mater and arachnoid overlying the tegmen tympani or indirectly by involvement of the membranous prolongations along the seventh and eighth nerves. 2. A fracture of the posterior fossa which, on reaching the jugular foramen, cuts across the petrous bone, traversing the vestibule, and severing the facial nerve in the region of the genu. The external signs of injury and the condition of the facial muscles will generally suffice to make clear which variety of fracture is present.

Prognosis and treatment.—The discharge of cerebro-spinal fluid does not materially influence the prognosis. Large quantities of fluid may be lost without any striking effect, and though the existence of such a discharge necessarily indicates the opening-up of the subarachnoid space to the exterior, yet the danger of infection does not appear to be increased proportionately, the outflow tending, no doubt, to wash away any micro-organisms present in the external meatus. Battle records 36 cases with a mortality of 25 per cent., and another writer 11 cases with a mortality of 27 per cent., the general mortality in all cases of fractured base being estimated at 32 per cent. As regards the special treatment in these cases it is most inadvisable to syringe out the ear, as by such means a stream of fluid is driven into the middle ear and even further if the tegmen, for instance, be extensively comminuted, the danger of infection being proportionately increased. The meatus should be merely swabbed out with some strong antiseptic, a little iodoform powder lightly blown in, and absorbent protective dressings applied, the whole being maintained accurately in position by firm and efficient bandaging. Frequent changing of the dressings may be necessary when the discharge is profuse. The patient must be carefully watched in case attempts may be made to interfere with the bandages and such action prevented by tying down the hands to the side. It is important to bear this in mind as such attempts are frequently made. When the fluid escapes from the nose or into the naso-pharynx little can be done to lessen the risk of infection, and as a result meningitis is most commonly secondary to a fracture of the anterior fossa.

A CHRONIC NEUROSIS CHARACTERISED BY FREQUENT PAROXYSMS OF PAIN, SWELLING, AND HÆMORRHAGE IN VARIOUS PARTS OF THE BODY; DEATH FROM ACUTE PULMONARY TUBERCULOSIS.

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THE patient was a man, aged 28 years, who, about seven years ago, had an attack characterised by pain and swelling in both knees. The illness began at about 10 o'clock one morning while he was standing at his work and the pain grew steadily worse until it compelled him to cease working at 4 P.M. The skin over the inflamed joints pitted on pressure. Great relief was obtained on lying down, but as the pain subsided discolouration appeared. The pain extended down to the feet but the swelling was confined to the region of the knees. The swelling disappeared some 12 hours after the pain ceased. After two days in bed without special treatment the patient felt quite well again. After two months of good health the two elbows became the seat of pain, swelling, and discolouration such as had previously involved the knees. In the articular attacks swelling and pain began almost simultaneously, the discolouration only appearing after the attack had reached its height and was commencing to subside. Active or passive movement of the affected joints caused intense pain. In some attacks fluctuation was quite distinct in the joints; in others the lesion appeared to be periarticular. Similar attacks occurred in the fleshy parts of the limbs—e.g., the calves, the thighs, the forearms, and the upper arms. The lesions often affected the limbs of both sides but were not always strictly symmetrical. Sometimes the four limbs were involved simultaneously. Small, red, slightly elevated spots occasionally appeared on the legs with some itching but without pain. Moreover, local irritation, as in working with the hands or in treading on a pebble, would cause red elevated blotches to appear on the hands or feet. These blotches were surrounded by a white ring and were associated with great heat and itching. They would disappear in a day or two and leave no staining behind them. The severe attacks were sometimes associated with malaise, slight shivering, and considerable thirst, but there was no headache or vomiting. In connexion with the attacks a little blood might be passed by the bowel, but the patient never observed blood in the urine and no blood escaped from the nasal or buccal mucous membrane. About three and a half years ago a painful lesion developed in the scrotum and spread to the penis. At a later date a similar attack began in the penis and spread to the scrotum.

This condition was accompanied by great pain and discolouration. About three years ago the patient began to suffer in his chest. He thought he was always getting cold and for a long time he was never free from such symptoms. The sputum varied from time to time and might be chiefly mucous, or thick and yellow, or again might contain a large or a small amount of blood. After the chest began to suffer, the severe attacks tended to involve the soft parts of the limbs more and the joints less than formerly. The pulmonary attacks were associated with pain and cough and lasted longer than the articular attacks. The temperature in a pulmonary attack was observed to be as high as 103° F. In the last few years of the patient's life pulmonary lesions seemed to develop frequently and yet, apart from progressive shrinking of the left lung, the abnormal physical signs cleared up time after time in a remarkable manner. On one occasion, two and a half years ago, the patient was working on his knees on a carpet for one and a half hours. About an hour afterwards a red blotch as large as a florin appeared on that part of each knee on which his weight had rested and in the course of some hours more there was great swelling with pain which was described as frightful. A soft painless swelling extended down to the feet. The attack in the knees detained the patient for two days in bed and left the parts black and blue. The tongue had often been the seat of patches of discolouration but usually without pain. The first occasion, so far as is known, was about two and a half years ago. With the exception, on one occasion, of the left upper eyelid, the face was never affected. In October, 1902, the patient felt his throat sore one afternoon as if he had got cold. By 7 P.M. pain set in and this was followed after a time by a sense of suffocation. Before three o'clock on the next morning he was suffering from orthopnœa. A swelling was observed behind the left tonsil and in the posterior part of the pharynx. At 10 A.M., when the attack was subsiding, it was found that swelling was present in the region of the false vocal cords to such an extent as to prevent examination of the parts further down. There was still some puffiness in the pharynx and behind the left tonsil.

The interval between the paroxysms in this disease varied. A period of two weeks was common and the longest was about four weeks. Each attack consisted of a series of lesions, varying from three to seven in number and involving in succession the joints, the skin, the lungs, and other parts. The duration of an ordinary attack was about a fortnight. In the later years the feet sometimes perspired excessively. The palms of the hands were affected in the same way but in less degree. Necrosis of tissue was never observed.

In the course of a detailed examination carried out in October, 1902, the following data were obtained. The urine contained no albumin or sugar but tended to deposit uric acid on standing. The digestive system was in good order. The appetite was good and the bowels were regular. No abnormality was discovered in the liver, spleen, or superficial lymph glands. The apex beat of the heart was in the fifth intercostal space slightly external to the nipple line. The left border of cardiac dulness was one inch outside the nipple line. The right border was a little to the left of the left sternal margin. The upper border was at the third intercostal space. The sounds were normal. The sputum consisted chiefly of frothy mucus. Dr. D. McCrorie, bacteriologist to the Glasgow Royal Infirmary, found that neither the tubercle bacillus nor the pneumococcus was present. The patient was liable to night sweats in connexion with the pulmonary attacks as well as in the severe articular attacks. Percussion was impaired in the left front and consonating râles were heard in the same region but the vocal fremitus and the vocal resonance were not definitely altered. At the back there was very slight impairment of percussion at the left apex. Crackling sounds, suggestive of pleural friction, were heard at the middle of the left back. An occasional dry râle was heard on the right side of the chest. The size and the movements of the chest were diminished on the left side. Investigation of the functions of the cranial nerves revealed nothing of importance. The sense of smell was not so acute on the left side as on the right. The pupils were large. Hearing was fair in both ears. The tongue deviated slightly to the left when protruded but could be fully turned to the right at will. In other respects the examination yielded normal results. The fundi oculorum were healthy. The knee-jerks were exaggerated but there was no ankle clonus. The plantar reflexes were absent. The feet were somewhat cold, moist, and livid, with a sluggish circulation. The cremasteric, abdominal and epigastric reflexes were active. The nutrition of the muscles was good but the patient had lost weight. Paresis, incoördination, disturbance of any kind of sensation, delayed conduction, girdle sensation, bullæ, changes in the hair and nails, clubbing of the digits, disturbances of the bowels or bladder, and tenderness and deformity of the spine were all entirely absent. The mental faculties were likewise unimpaired.

Examination of the blood showed that the red corpuscles were normal in form and size and formed rouleaux as in health. They numbered 5,400,000 per cubic millimetre. The white corpuscles numbered 10,000 per cubic millimetre. The hæmoglobin was 75 per cent. of the normal. A bacteriological examination by Dr. McCrorie showed that the blood was sterile. On different occasions in the month of February, 1903, Dr. Hugh H. Borland determined the coagulability of the blood by means of Wright's coagulometer and obtained normal results.

In March, 1903, it was noted that during the past 11 months there had been no material change in the patient's general condition. He seemed to consider that he was not losing ground. There was now little or no expectoration and the night sweats had ceased. The signs of shrinking of the left lung, however, were rather more marked. There was distinct retraction of the left front of the chest. The left border of cardiac dulness was one and a half inches outside the nipple line and the right border was an inch to the left of the left sternal margin. Percussion was impaired over the front and side as well as the upper part of the back of the left chest. On the affected side the respiratory murmur was diminished, bronchial breathing could be heard above the clavicle, and scanty crackles, probably due to pleural friction, were detected over the back. Early in February, 1903, a large hæmorrhage occurred in the mouth, involving principally the soft palate but extending down to the pillars of the fauces on the left side. This was associated as previously with some œdema but neither the hæmorrhage nor the œdema was so great as in the previous attack in the throat. Shortly after this there was a large hæmorrhage in the left chest wall extending vertically from the angle of the scapula to the lower costal margin and extending horizontally (at its widest part) from the middle line behind to two inches in front of the mid-axillary line. These phenomena abated rapidly though minute lesions were continually appearing and disappearing. At the commencement of this attack he was admitted to the Glasgow Royal Infirmary for three weeks and during the last week of his residence and for two months thereafter he had applications of high-frequency currents for 20 minutes daily. At this period the muscular pains were sometimes very severe in the legs but the arms were seldom affected. To give a fair idea of the daily variations of the symptoms the following notes are extracted from the patient's diary: "March, 1903: 28th—Soles of both feet swollen and discoloured. Hæmorrhage into tip of right thumb and into left hand. 29th—Swelling of palm of left hand, with pain. Muscle pains severe. 30th—Hæmorrhagic spots in tongue and under right knee. Cough bad. 31st—Cough bad. Muscle pains severe. April: 1st—Pain in both knees acute; no swelling. Hæmorrhage in middle finger of left hand. 2nd—Left wrist swollen and very painful. Knees painful but not swollen." The notes of the symptoms continue in the same style until the middle of June when the troubles ceased for a few days and the patient was able to describe himself as "very well." On the 17th of that month, however, he began to suffer again from pain in the chest and hæmoptysis, and other pains and hæmorrhages soon supervened. In July he improved again and the cough ceased. On Sept. 1st hæmorrhages appeared in both feet and were attributed to the wearing of boots instead of shoes, but within a few days hæmorrhages took place not only in other parts of the lower limbs but also in the palms of the hands. After being free for some months from any very serious trouble the patient was taken ill on the night of Dec. 27th, apparently in consequence of emotional excitement brought on by seeing his father in a severe epileptic fit. When seen on the following morning he was complaining of pain in the lower part of the left chest and a pleuro-pericardial friction sound was heard in that region. He was spitting blood and his pharynx was congested and œdematous. Swelling and ecchymosis were present in the left arm and between the roots of the right thumb and forefinger. A hæmorrhage was detected at the left instep and a certain

amount of pyrexia was present. On Jan. 1st, 1904, there were signs of disease at the right apex and the patient seemed dangerously ill. He improved again, but on the 3rd he was seized with pain in his neck accompanied by symptoms of shock and he died within an hour.

A post-mortem examination was made on Jan. 4th at the patient's residence by Dr. Hugh McLaren, assistant pathologist to the Glasgow Royal Infirmary. The general nutrition was fairly good. An extensive ecchymosis was present on the left forearm and upper arm, and after cutting through the skin in this region the hæmorrhage was distinctly seen underneath. A subsequent microscopical examination showed that the extravasated blood was in the interstitial tissue of the muscle as well as in the subcutaneous areolar tissue. The pericardium contained a few ounces of serum. Both ventricles of the heart were distended with blood. The aortic and pulmonic valves were competent. The heart was slightly enlarged, the mitral orifice admitting three and the tricuspid four fingers. The coronary arteries showed some fatty patches but were otherwise healthy. The cardiac muscle was healthy. The right lung was large and emphysematous. The upper lobe was consolidated and had a thick layer of recent fibrin on its surface. It was the seat of miliary tuberculosis and, in addition, contained a small cavity near its apex. The lower lobe was congested and œdematous. The left lung was shrunken and contained numerous miliary tubercles. The liver was the seat of cloudy swelling. The spleen was large and its Malpighian bodies were well marked. Hæmorrhages were present in its substance and the microscope suggested that these were partly in the Malpighian bodies and partly in other parts of the organ. The kidneys were congested and here and there the capsules were adherent. The suprarenal bodies were normal. The wall of the small intestine was remarkably thin. Recent tuberculous lesions were found in the bowel, chiefly in the large intestine.

The following is Professor Charles Workman's report on the brain and spinal cord :—

> The brain and spinal cord were preserved in formol and examined by me. The brain presented remarkably healthy characters and was evidently very well developed. Sections of the cord were prepared from various regions and were stained with thionin blue. In the cervical region the posterior part of the columns of Goll showed apparently some increase of the neuroglia, while the anterior parts and the columns of Burdach appeared quite normal. In the dorsal and lumbar sections all the posterior columns appeared quite normal. In the dorsal region the small arteries and capillaries, especially in the neighbourhood of the central canal, appeared unduly numerous and congested and the lymphatic areas around them considerably dilated. In some of the vessels there were numerous leucocytes, many of which were filled with a dark brown pigment, probably altered blood-colouring matter, and the erythrocytes seemed to have lost their colour. In the cervical and lumbar regions also this condition of the vessels might be made out but it was not nearly so well marked. The multipolar nerve cells throughout the cord were well developed and showed the Nissl's bodies well stained. The pigmented area in these cells did not show so well as is usual, but this was perhaps partly due to the fact that I had hardly carried the decolouration process far enough.

It is evident that the symptoms cannot be explained by the scanty and slight changes which were recognised in the spinal cord. A peripheral nerve which was examined showed no change. Professor Workman examined tissue from the spleen and from the region of the ecchymosis, but after specially staining it for micro-organisms he was unable to discover any.

No cause can be suggested for this remarkable illness. The one fact in the family history which seems to throw light upon it is that the father is an epileptic. Neither the father nor the brother is a bleeder and the patient himself had no excessive hæmorrhage after a tooth extraction. In his school days he readily took feverish colds, with cough and expectoration, but he thought they did him no harm. Venereal infection could be excluded. Between the attacks the health was good and the patient could take a considerable amount of exercise. When on holiday in summer he would gain in weight. Following his occupation he had been in the East and he once spent a few days in China but he never had malaria, dysentery, or any other tropical ailment. His younger brother, aged 20 years, became ill in the middle of December last, two weeks before the end of a long voyage, with pulmonary tuberculosis, and died in March.

We have not been able to find a report of any other case exactly like the one just described, although a glance through the reports of such cases as Professor Osler has brought together in his papers[1] on the visceral manifestations of the erythema group of skin diseases suggests certain affinities. The phenomena differ from those of all the familiar hæmorrhagic diseases. Thus the non paroxysmal disorders of this class, such as scurvy and leukæmia, may at once be set aside. Hæmophilia is sometimes associated with hæmorrhages into and around joints but it shows itself earlier in life, runs in families, and does not occur in frequently recurring paroxysms accompanied by severe pain. Moreover, our patient showed no abnormal tendency to bleed when blood was withdrawn for examination or after a tooth extraction. Purpura simplex takes the form of one or more crops of petechiæ, chiefly on the legs, though sometimes on the trunk. As a rule there is no constitutional disturbance and though there may be slight articular pains the actual hæmorrhagic lesions usually give rise to no subjective phenomena. Though wheals and itching (purpura urticans) are occasionally noted, these present no analogy to the severe localised and painful swellings which developed in the present case. In purpura rheumatica there are articular pains with some constitutional disturbance but the articular pains are not attributable to hæmorrhages in or around the joints, and, moreover, there are crops of petechiæ which are not painful. In the present case crops of petechiæ were exceptional and large œdematous swellings, which speedily became the seat of hæmorrhage, prevailed. Moreover, purpura rheumatica does not appear in frequently recurring paroxysms involving the most diverse parts of the body as this disease did. In purpura hæmorrhagica there are petechiæ as in purpura simplex but here hæmorrhage is the important and serious phenomenon; pain is not a marked feature; there are no tender, œdematous swellings; nor are there paroxysms occurring frequently, during years, with short intervals of health between them. Henoch's purpura is characterised by arthritis, purpura, abdominal pain, vomiting, intestinal disturbance, hæmorrhages from mucous membranes, and sometimes nephritis and splenic enlargement. In the present case there were seldom petechiæ; the lesions were not specially in the joints, and if seated at the joints were periarticular as well as articular; there was rarely abdominal pain; and the lesions of visible mucous membranes were characterised by swelling much more than by hæmorrhage. Blood actually escaped only from the rectum and the respiratory organs. The whole group of cases included under the designation hæmatidrosis or bloody sweat, bleeding stigmata, and neurotic excoriations may be excluded from present consideration as being characterised by the escape on to the free surface of the skin of a sanguineous or apparently sanguineous fluid. Urticaria in its usual form, characterised by itching wheals of sudden development and transient duration, has no resemblance to the present affection, though wheals did occasionally occur, and a moderate degree of dermographism was recognised in this patient. The more persistent form of that disease, urticaria perstans, is not accompanied by severe pain. In hæmorrhagic urticaria (purpura urticans) a wheal develops in a cutaneous hæmorrhagic lesion, or the converse may be witnessed, or wheals and hæmorrhages may develop side by side. In our case there were no wheals as a rule.

The disease presented certain points of resemblance to angio neurotic œdema (acute circumscribed œdema, Quincke's disease, giant urticaria, massive urticaria, &c.), in which œdematous swellings develop suddenly in the skin, specially of the face, genitals, and limbs. These may be as large as the palm of the hand and by coalescing may involve extensive areas. But in our case the swellings were not always circumscribed, the visible lesions were the seat of hæmorrhage, and pain was in many of the attacks the first phenomenon. In both diseases, however, the swellings of the mucous membranes may cause serious symptoms, as in the larynx, pharynx, and fauces. Hæmoglobinuria has been observed in several cases of acute circumscribed œdema but hæmorrhage, either in the skin or from a mucous membrane, though it has been reported, appears to be very exceptional.

The absence in the well-marked attacks of itching, erythema, vesiculation, and desquamation distinguishes the present disease from what Ramsay Smith has described as general angio-neurotic œdema.[2]

The facts of the case just recorded suggest that the disease is a neurosis allied on the one hand to angio-neurotic œdema, though, on the other hand, presenting points of resemblance

[1] American Journal of the Medical Sciences, 1895, vol. cx., pp. 629-646; British Journal of Dermatology, 1900, vol. xii., pp. 227-245; American Journal of the Medical Sciences, 1904, vol. cxxvii., pp. 1-23.

[2] Angio-neurosis (Bristol).

to a disease which is as likely as not of infectious origin—namely, the purpuric type of erythema. In rare cases of tabes dorsalis small or even considerable subcutaneous hæmorrhages may follow paroxysms of lightning pains, so that hæmorrhage may certainly be due to nervous disturbance. Moreover, in urticaria, into which the neurotic element enters largely, there may be exudation not only of serum but also of corpuscles. It is to be noted that our patient was the subject of factitious urticaria. We may add that Professor Workman, as a result of his anatomical examination of the case, is disposed to accept the view which we adopted after careful clinical investigation and to regard the hæmorrhages as neurotic rather than infectious in their origin.

It should be mentioned that during life numerous remedies were employed for the cure or relief of the disease or its most urgent symptoms but none of them exerted any very noticeable influence. The drugs included antipyrin, ergot, opium, bromide of potassium, iodide of potassium, iron, arsenic, and calcium chloride. Counter irritation in the form of a seton at the back of the neck appeared to do almost as much good as any internal remedy.

Glasgow.

BRACHIAL NEURITIS.[1]

BY CHARLES W. BUCKLEY, M.D. LOND.

THE scanty attention which this subject has received in modern text-books of medicine is remarkable and the references to it in current medical literature are few and far between, although it is as well defined as sciatica and quite as painful and disabling. The same difficulty arises as in sciatica in distinguishing between neuritis and neuralgia, but I wish as far as possible to confine my remarks to the former. It is certainly becoming more common, as is the case with many other affections of the nervous system, but whether this is to be accounted for by a progressive increase in the vulnerability of the nervous structures which appears to be a feature of modern life is a question which I shall not attempt to discuss. The causes are very numerous but the prominent symptom in every case is pain, sometimes sudden in onset, but more often slight and occasional at first and only felt on making certain movements, notably those of raising the arm, but it increases and becomes more continuous with paroxysmal exacerbations; it is dull and varying in character and appears to be greater than in most forms of neuritis. It may be referred to the scapula, especially over the area of the suprascapular nerve, the shoulder-joint, or wrist, with or without the hand, according to the nerves chiefly affected. The form arising from injury is perhaps the commonest and has received the most attention, and I therefore propose to deal with it first and afterwards to point out in what respects those arising from other causes differ from it. This form commonly results from a fall broken by catching at some object, thus throwing the weight of the body suddenly upon the structures at the shoulder joint. The results vary according to the extent of the injury and the nervous symptoms frequently do not show themselves at once but come on gradually, perhaps two or three weeks afterwards when the other symptoms are disappearing. There is marked tenderness over the affected nerves and wasting and paralysis appear in varying degrees, but the reaction of degeneration is rarely present in its complete form though some modification of the electrical reaction is common. In all forms there is some limitation of movement, due more often to pain than to paralysis, and in severe cases passive movement is also limited by changes in and around the joint, in which crackling and grating may be perceived. The cause of these changes has been the subject of much discussion. Barwell[2] points out that in some hysterical subjects crackling, which arises in the subacromial bursa, may normally be perceived on slight movement. Damage to this bursa is very likely to arise in such an accident as I have described, or may arise secondarily from trophic causes, and the crackling may be due to this cause alone, but in severe cases the joint also shares in the trophic effects and synovitis or arthritis results. Jarjavay has demonstrated that if the bursa is torn or otherwise injured it is quite capable in itself of giving rise to coarse crackling and pain, and hence immobility.[3] Duplay, in the only account of a necropsy which appears to be recorded,[4] describes the following changes: (1) chronic subacromial bursitis and subdeltoid cellulitis with obliteration of the bursa and formation of adhesions between the deltoid and the humerus; (2) chronic inflammation of the capsule leading to thickening; (3) periarticular cellulitis internal to the joint leading to formation of fibrous tissue; (4) congestion of the ulnar and internal cutaneous nerves; and (5) atrophy of the deltoid. The circumflex nerve was not examined, but the author assumes that pain on pressure is due to inflammation of the nerve the result of compression and traction by adhesions. There was also a dislocation of the humerus and it seems probable that a good deal may have been attributable to this, for it is difficult to see how such extensive damage could result from a simple strain or bruise of the shoulder, even making the most liberal allowance for trophic effects, but the account throws a good deal of light on the pathology of the symptoms commonly accompanying the severer forms of neuritis. Duplay in illustration quotes five cases of neuritis from simple contusion with similar symptoms and compares them. Certainly very slight injuries may cause synovitis or a nerve lesion with far-reaching effects. Berne supports the view that peri-arthritis is the chief lesion[5] and Vietor puts forward the theory that the shoulder changes are trophic effects from injury to the circumflex nerve, quoting Weir Mitchell in support who says: "Any form of nerve lesion is capable of developing in the joints inflammatory conditions, usually subacute, and which so precisely resemble rheumatoid arthritis that no clinical skill can distinguish between the two."[6] Bowlby differs somewhat from this and says that he has not seen cases of joint injury so severe as Weir Mitchell describes from nerve lesions, but that arthritic lesions of a less severe and more chronic kind are among the most common results of nerve injury.[7]

The evidence I have quoted seems to me sufficient to prove that the effect of the neuritis upon the joint may be very serious and even permanent, although such is not often the case in non-traumatic forms, but cases presenting joint lesions closely resembling those of rheumatoid arthritis are by no means uncommon, and I have dwelt upon this question of trophic joint changes thus fully because I believe that many cases are regarded as rheumatic simply because the joint is affected and the question of injury is overlooked. Simon has recently reported a series of cases of traumatic origin[8] and asserts that some violence is always necessary to the development of brachial neuritis; but in this I cannot agree with him and the analogy of sciatica should be sufficient evidence to the contrary. It must be admitted, however, that sufficient attention may not have been paid in the past to any history of injury, however slight, for the position of the plexus renders it more liable to injury than is the sciatic nerve. I think there is no doubt, however, that the traumatic cases are the most severe of all. The neuritis, as has been mentioned, is sometimes a late result of the injury, and this may mislead as to the cause. Vietor[9] reports a case due to a fall broken by catching at the handle of a door, which showed at the onset pain, weakness of the deltoid, and limited movement; these symptoms improved, but four weeks later the patient suddenly became worse with most intense pain and all the symptoms of a severe neuritis. This late onset was also clearly shown in a case of my own, and equally well by a series published recently by Distin.[10]

Apart from injury gout is undoubtedly the most prominent etiological factor and in many cases the only discoverable cause, while in others it acts merely as a predisposing condition. In men the neuritis may be accompanied by any of the ordinary manifestations of gout, and in women irregular forms are common accompaniments, while in either sex it may be the only symptom and diagnosed as gouty in the light of the family history. Trophic symptoms are rarely marked in this form and the chronic enlargement of the finger-joints commonly present in cases arising late in life are a

[1] A paper read before the Medical Society of London on Feb. 22nd, 1904.

[2] Diseases of Joints.

[3] Gazette Hebdomadaire, 1867.

[4] Archives Générales de Médecine, 1872.

[5] L'Union Médicale, 1897.

[6] Injuries of Nerves, Philadelphia, 1872.

[7] THE LANCET, vol. i., p. 1021, 1887.

[8] Brit. Med. Jour., 1903, vol. ii.

[9] L'Union Médicale, 1897.

[10] Brit. Med. Jour., 1904, vol. i.

manifestation of the gouty diathesis rather than a result of the neuritis. The acute forms both in this and the following group are probably in most cases at the outset acute inflammations of the fibrous structures of the muscles recently described by Gowers,[11] and for which he suggests the term "fibrositis." In these cases, which arise commonly after a chill, the onset is sudden with generalised pain and tenderness of the shoulder muscles and the whole arm may be involved so that the patient cannot bear to move in any direction, there are slight pyrexia and loss of appetite, and this acute stage may last for a week or more. The mischief spreads from the muscles to the sheaths of the nerves and often to other fibrous structures in the vicinity, and when the acute condition subsides a chronic neuritis is often left. This course was strikingly evident in one case of my own but I have not often met with it, since cases sent to Buxton for treatment have usually reached the chronic stage or have been chronic from the commencement.

Many cases are termed rheumatic, though probably true rheumatism rarely plays any part in their causation. They often arise from a chill, especially in a gouty subject, and in the majority of cases I am inclined to believe have their origin in a general fibrositis and are acute at the onset like the form I have already described. In two of my cases there were cardiac symptoms; in the first, a case commencing as an acute fibrositis, there was a loud systolic murmur when the patient first came under my observation, a month after the onset, but this, together with the accompanying dilatation, showed marked improvement under treatment and had almost disappeared when he left Buxton a month later. The second case showed slight irregularity with weakness of both sounds but the patient was 69 years of age and had had an attack of influenza during the course of the neuritis, so that it is not probable that the cardiac condition was due to rheumatism. With the cases of this type may also be included those occurring in coal-miners, which Charles has recently described, though there seems in these to be also a possibility of strain as a cause.[12] Many cases occur in women at the menopause, some of which appear to be gouty, while others belong to the class of neuritis occurring in pregnancy and the puerperium, as described by Turney in an exhaustive paper upon the subject.[13] He attributes them to toxæmia and finds that when the neuritis is limited to the arm the median and ulnar nerves suffer the most, otherwise the posterior interosseous is chiefly affected. This differs somewhat from the distribution in other forms, the circumflex being affected by far the most frequently in my experience. The pain is often very severe and wasting may go on to an extreme degree, while, on the other hand, cases occur in which the extent of the neuritis is very limited and the symptoms are slight.

Reflex irritation appears to be responsible, in part at any rate, for a certain number of cases, of which those due to aneurysm are the most important. With this exception they do not call for special mention, but a case which came under my notice, diagnosed as rheumatic, though without very clear evidence, was interesting. There was a lipoma situated in the scapular region from which the pain radiated and it was much worse if the tumour was lain upon or the muscles in relation to it were called into play, the other symptoms being of the usual type. As the improvement was but slow I advised its removal and this was done as soon as the patient returned home. The pain disappeared as the wound healed and the arm is now quite well except for an occasional sensation of coldness and numbness. In most cases, however, a certain degree of psychic concentration of the pain is present and neuralgia often persists as a habit after the removal of the nerve lesion which originally started it. In another case of a lipoma in the same region treatment was sought because of neuralgic pains which, starting from the tumour, radiated down the arm as far as the fingers.

One of my cases was interesting in that it followed an attack of lead poisoning, appearing some six months after the lead was detected. There were none of the usual symptoms of lead neuritis and the case did not differ from the common type, but there was a well-marked lead line with a considerable degree of saturnine cachexia, and the patient was rather emaciated. There were a gouty family history and a few doubtful symptoms of irregular gout. Menstruation was regular and normal, whereas the great majority of cases in women occur after menstrual life has ceased.

To summarise, the prominent symptoms are pain, varying in degree but often very severe when at its height; tenderness of the affected nerve trunks, and of certain cutaneous areas related to them; weakness of certain muscles and limitation of movement, due partly to this and partly to changes in the subacromial bursa, or in and around the joint; trophic changes, rarely severe; and sensory symptoms such as anæsthesia and hyperæsthesia, which are often very slight but often persist after the other symptoms have disappeared. It is certainly open to discussion whether the joint changes when present are in all cases trophic or whether they may not have been primary, the mischief subsequently extending to the fibrous structures in the neighbourhood, which would account for the circumflex nerve being so commonly implicated, but, on the other hand, this is the chief nerve supplying the shoulder-joint and if primarily affected the joint would probably suffer secondarily to a greater or less extent. Or the fibrous structures of the joint, muscles, and nerves may all be affected at once in an acute attack of fibrositis, with only partial recovery of the joint owing to the trophic influences of the damaged nerves. In my opinion, however, the trophic origin is by far the most common and the joint is more frequently affected in the traumatic cases than in other forms, though this may be partly the result of injury to the joint itself independent of the nerves.

The diagnosis may be difficult; all nerve pains in the left brachial region have, as Gowers has pointed out, a tendency to resemble anginal pain and to be accompanied with cardiac distress; aneurysm is a possible source of error and tumours of the cervical spine or of the bones of the shoulder may by pressure on the nerve closely simulate neuritis or cause neuralgia, while lesions of the cervical cord must not be forgotten. Time will not permit me to discuss the differential diagnosis but the influence of movement, the presence or absence of tenderness, and, in some cases, the use of the Roentgen rays are important aids.

As to the prognosis, the duration is probably never less than three or four months and may extend over a year or more. The older the patient the more chronic the case is likely to be, while much depends on the degree of rest which the parts obtain. Relapses occasionally occur and recovery is often incomplete, the limb remaining weak, with occasional tingling pains or numbness, while there are frequently adhesions left in the shoulder-joint after a severe attack.

With regard to treatment, in cases commencing acutely, whether as part of a general fibrositis or as a simple neuritis, rest in bed is necessary at first with purgation and treatment suitable to the general condition; colchicum and alkalies may be useful in gouty subjects or salicylates if the case is of rheumatic origin. In the acute cases I have found aspirin with or without phenacetin of much value and mesotan for external application is often very useful. Poultices and hot applications generally give relief to the pain and where they fail ice is sometimes of use. I have found the coal-tar analgesics when given in regular and sufficient doses more generally useful than opium or its derivatives for the relief of pain, and in this the majority of recent writers agree, but in the most severe cases morphine becomes necessary. When the acute stage is past, rest to the affected limb is still, as in those cases chronic from the first, of the utmost importance; this can usually be secured by the use of a sling but it is sometimes better to bandage the affected limb to the side. In the chronic cases of gouty origin alkalies and iodide of potassium are sometimes of value and chloride of ammonium may be tried but otherwise drugs, with the exception of analgesics, are of little use and, considering the long duration of the majority of cases, other measures for the relief of pain are desirable whenever possible. I have found the greatest benefit in this respect from the free use of blisters along the affected nerve trunks or over the tender points, while subsequently, or in cases in which the pain is less severe, galvanism has an anodyne effect and both undoubtedly exert a beneficial effect upon the general course of the disease. Other forms of electricity are of much less value, being, as Lewis Jones ("Medical Electricity") has pointed out, chiefly of use in those cases in which neuralgia persists as a habit after the disappearance of the nerve lesion which originally caused it. Faradism and the sinusoidal current are, however, of use in the treatment of the wasted muscles and some authorities have found high frequency currents of

[11] Ibid. [12] Ibid.
[13] St. Thomas's Hospital Reports, vol. xxv.

benefit. Massage, in my own opinion, must never be used as long as the nerves are acutely inflamed; later it is of value for the removal of the inflammatory effusion in the nerve trunks and especially in traumatic cases with effusion into and around the joints when it may often be advantageously combined with radiant heat, but if it causes any marked pain I am strongly of opinion that it does more harm than good. In the rheumatic and gouty cases a course of treatment at Bath or Buxton is of great benefit and the majority of cases find relief from the mineral baths, vapour baths, and hot douches which are a feature of the treatment at both places. The diet and digestion often call for attention and tonic treatment by drugs and change of air is generally desirable in view of the debilitating effect of the long-continued pain. In choosing a place to which the patient may be sent it is important to remember that the sea does not suit many cases and a bracing inland climate is more generally beneficial, though a clay soil should be avoided if possible. The combination of such a climate with the advantages of balneological treatment renders Buxton especially suitable for these cases. As is usually the case in such chronic and obstinate conditions, the number of remedies that have been suggested is legion but I have only advocated those which I have personally found beneficial.

Buxton.

INTRACRANIAL RESECTION OF THE SECOND DIVISION OF THE FIFTH NERVE FOR EPILEPTIFORM NEURALGIA.[1]

BY J. HUTCHINSON, JUN., F.R.C.S. ENG.,
SURGEON TO THE LONDON HOSPITAL.

SOME three years ago, in a paper on excision of the Gasserian ganglion, I advanced the proposal "that the so-called excision of Meckel's ganglion (always a very difficult and uncertain proceeding involving disfigurement of the face) should be given up in favour of intracranial division of the superior maxillary trunk just above the foramen rotundum."[2] The recommendation was based on the following considerations:—

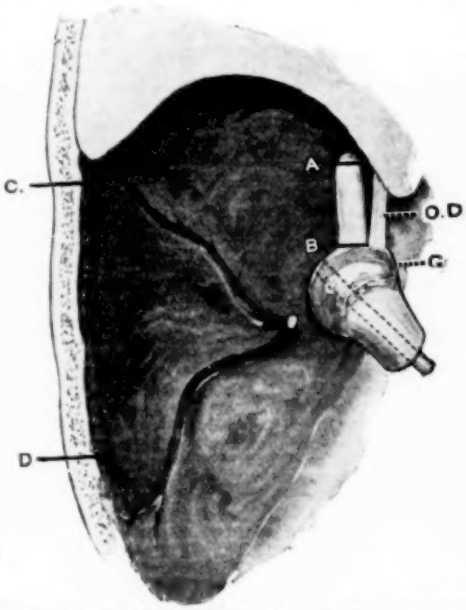
1. The more central the operation, the nearer to the brain, the more certain is the prospect of permanent cure. In almost every case of peripheral operation, including removal of Meckel's ganglion, the neuralgia has returned after an interval of a few months or years.

2. The surgeon who works through the walls of the antrum to the pterygo-maxillary fossa is greatly hampered by the depth of the wound and by hæmorrhage from the internal maxillary artery. He may be successful in defining the trunk of the superior maxillary nerve in the upper part of the fossa, but he is very likely to fail.

3. A depressed scar in the middle of the cheek is much more disfiguring than one hidden by the scalp in the temporal region.

In the middle fossa of the skull the whole of the superior maxillary trunk, before it has given off any branches, can be exposed. Here it can be not only divided but a considerable portion of it can be excised so that there will be no chance of subsequent union. The amount of the nerve available at this point for excision varies somewhat in different subjects, but from one-third to half an inch can be resected. The accompanying figure will make this plain. The trunk should be divided just at the foramen rotundum and again where it leaves the Gasserian ganglion, as shown at A B. Cases in which such an operation is justified are not numerous and it was only about a year ago that one presented itself to me.

A ship's officer, nearly 60 years old but of fine constitution, had suffered for several years from intense pain in the right cheek and the upper jaw. The neuralgia was typically epileptiform, the attacks becoming more and more frequent during the last four years. He had had a number of teeth removed without the slightest relief and medicines were equally unavailing. He struggled on with his duties on board a Cape liner and about Christmas, 1902, he consulted Sir Frederick Treves with regard to operative measures who kindly sent him to me with a note suggesting the removal of Meckel's ganglion and the infra-orbital nerve. The distribution of the neuralgia was always the same and the parts were very tender, though during an attack some relief was obtained by the patient violently grasping the tissues of the cheek. The lower eyelid, both sides of the cheek, the palate,



Intracranial resection of the superior maxillary nerve. A B, Portion of nerve to be excised. C D, Wall of temporal fossa cut away in the operation. O D, Ophthalmic division. G, Gasserian ganglion.

and the gums on the right side formed the area involved. Lacrymation and congestion of the right eye were frequent. It might be suggested that exposure on deck to wind and wet was a predisposing cause of the neuralgia but the attacks were equally severe when he was on land and they occurred both by day and night. He had the aspect of great suffering and depression.

My friend Mr. T. Crisp English assisted me at the operation, which was performed with the patient fixed in a dentist's chair in order to lessen the trouble from venous hæmorrhage. A horseshoe flap was turned down from the temporal region, having its base at the zygoma, the flap including part of the temporal muscle and the pericranium. With a large trephine and cutting forceps the subjacent bone was removed and the dura mater was exposed. As in the operation for removal of the Gasserian ganglion the dura mater and the temporo-sphenoidal lobe were then carefully pushed upwards and inwards, making for the foramen rotundum as the landmark. (In this respect the two operations differ, as in dealing with the Gasserian ganglion the foramina spinosum and ovale are first sought for.) Considerable difficulty was met with owing to the thin and fragile character of the dura mater and some cerebro-spinal fluid escaped. Ultimately the trunk of the superior maxillary division and part of the Gasserian ganglion were thoroughly exposed, a broad spatula of soft metal being used to retract the dura mater and the brain. The whole of the nerve was then removed, a small drain was subsequently inserted, and the flap was sutured in position. None of the bone removed was replaced. Primary healing followed and no complication of any sort occurred. The patient returned a month later to his duties and has made regular ocean voyages ever since.

I have waited 12 months before reporting the case in order to ascertain that the relief is permanent and I am glad to state that he has not had the slightest recurrence. The anæsthesia is most marked over the cheek and the right

[1] A paper read at a meeting of the Clinical Society of London on March 11th, 1904.

[2] Transactions of the Medical Society of London, vol. xxiii.

superior maxillary bone; it involves also the soft palate and the lower eyelid. He can eat and talk with perfect comfort, whereas before the operation both acts brought on spasmodic pain. The scar is hardly to be noticed, the gap in the bone has practically filled up, and there is, of course, no paralysis of masticatory muscles on that side such as follows removal of the Gasserian ganglion. I am confident that no recurrence is likely to take place.

It would be erroneous to suppose that the operation is an easy one: the depth of the nerve trunk (three centimetres or more from the wall of the temporal fossa) and the troublesome oozing in a narrow space where it is essential to see and to define a nerve-trunk of small size prevent this. But having had the opportunity of assisting my colleague Sir Frederick Treves in several operations on Meckel's ganglion I can safely assert that the intracranial route is at least as easy as the facial one and without any doubt it affords the more certain access.

It will be remembered that the superior maxillary nerve immediately on entering the pterygo-maxillary fossa gives descending branches to the palate and bone with internal branches to the cavity of the nose. It is easy to follow up and to remove the infra-orbital nerve from in front but it is very difficult to remove the trunk and all its branches in the fossa. Moreover, even if this is accomplished the evidence is strong that recurrence of the neuralgia is only a matter of time. In Sir Frederick Treves's five cases it recurred within 12 months in two, a third patient died (from cancer) within six months of the operation, and in the remaining cases recurrence was observed in two and three years respectively. Mr. T. F. Chavasse collected 22 cases of what is often termed Carnochan's operation; in only three was the relief stated to be lasting. With regard to operations on the Gasserian ganglion properly carried out (this may be emphasised without going into details here) the evidence is conclusive that the neuralgia is permanently cured.

There are other methods of approaching the superior maxillary trunk which I venture to think compare most unfavourably with the temporal route. In Professor Lücke's operation the masseter muscle is divided, the zygoma is cut through, and an extensive scar is left on the side of the face. The zygoma may not unite again and movements of the lower jaw may be much interfered with. Nussbaum and Billroth employed osteoplastic resection of the upper jaw, while Kocher and others used methods involving a temporary resection of the outer orbital wall. Not one of these methods or their modifications afford access to the trunk where it comes off from the Gasserian ganglion. In Sir Frederick Treves's words: "These various measures are all needlessly severe and involve wounds of great and unnecessary magnitude."

It is well known that in cases of epileptiform neuralgia of the fifth nerve one, two, or three divisions of the nerve may be involved. In some patients the pain is mainly limited to one division, usually the inferior or the superior maxillary, with radiations into the ophthalmic branches or even the cervical plexus. Experience has shown that a thorough operation on the central part primarily involved will almost always cure the lesser and more widely distributed neuralgia. Supposing the inferior maxillary division to be alone or mainly affected it is open to question whether an intracranial removal of the lower part of the ganglion and inferior maxillary trunk would not be preferable to the elaborate operation usually performed below the foramen ovale. The conditions here are not so favourable, however, as exist in the superior maxillary trunk where about half an inch of the nerve can be exposed and removed. Codivilla, an Italian surgeon, has, however, performed it twice with success, his first case being in 1897. When both second and third divisions are mainly involved I am sure that removal of the lower half of the ganglion, leaving the ophthalmic division intact, is the best operation. As a series of cases has shown, going back from two to seven years, no recurrence of neuralgia need be feared in the ophthalmic part that has been left intact. But where the superior maxillary division alone is concerned the operation described may be advocated in preference either to Carnochan's method or the more complete operation on the Gasserian ganglion itself.

(Note.—After the foregoing paper was read at the meeting of the Clinical Society Mr. Stanley Boyd related a case in which he had—about the same time as myself—performed intracranial resection of the second division of the fifth nerve for epileptiform neuralgia limited to that distribution. The result had been complete relief for about a year, at the end of which time slight neuralgia was again reported, though its localisation was uncertain.)

Cavendish-square, W.

NOTES ON A CASE OF MYELOPATHIC ALBUMOSURIA.

BY R. CATHCART BRUCE, M.D. EDIN.,
KENNETH F. LUND, B.A. CANTAB., M.B. LOND.,
AND
P. PERCIVAL WHITCOMBE, M.B. LOND., M.R.C.S. ENG.

CASES of myelopathic albumosuria are sufficiently rare to justify our reporting in full the following one which first came under our care in December, 1902.

On Dec. 30th the patient, a female, aged 51 years, was crouching down before the fire when "she turned faint, felt something give way in her thigh, and fell over on the floor." On examination it was found that she had sustained a simple fracture of the left femur at the junction of the middle and lower thirds with an unusual and peculiarly dry grating crepitus. The fracture was put up in the usual way and at the end of two months was firmly united with about one inch of shortening and a large amount of callus. A week after the setting of the fracture, in January, 1903, as the nurse was raising the patient in bed with one arm under the left axilla she felt a distinct crack and it was found that the left clavicle had become fractured near the acromial end. This fracture never united and a false joint formed with a swelling of the size of a hen's egg and semi-fluctuating in character over the seat of fracture. Three months later the patient was well enough to be removed to the country and while entering a carriage experienced a sharp pain in the left side of her chest. On arriving home she was put to bed, where a medical man found that she was suffering acute pain in the chest wall, with a temperature of 105° F. The diagnosis given to the relatives was "pleurisy," but, as the necropsy revealed, the condition was more probably due to a spontaneous fracture of the rib owing to muscular exertion. During July and August the patient was suffering from marked and increasing anæmia, emaciation, and lassitude. Attacks of vomiting and diarrhœa were frequent in spite of care in diet. The quantity vomited was considerable, amounting to from one to four pints, and consisted of partially digested food which was never blood-stained. The attacks occurred suddenly, without pain or effort or previous nausea. The loose motions were extremely offensive. On Sept. 13th the patient when in bed fractured her left humerus at the junction of the lower and middle thirds when endeavouring to reach something lying beneath her. This fracture did not unite as she rapidly became weaker and wandering in her speech, finally passing into a kind of stupor, until the evening of Sept. 27th, when she died.

Previous history.—When about 13 years of age the patient was laid up for a period of two years with lateral curvature of the spine which became permanent. There was no Pott's curvature or disease of the vertebral bodies. She never had any other serious illness. For the last 20 years, owing to a change in her circumstances and straitened means, she had partaken of a very spare diet, with little meat and much bread and tea. During this time she was employed as a journalist and though energetic and active did a great deal of literary work at her desk. In February, 1902, she fell in the street suddenly and without apparent cause. In her own words, she "felt giddy and fell on her right hip"; she was picked up and went home in a cab and except for feeling somewhat shaken was none the worse after two days in bed.

General symptoms.—When first seen the patient, who was always small and of a spare habit, presented the appearance of anæmia and general debility. She complained at various times of pains in the chest, the back, the right side, and the left hip. They were often severe, neuralgic in character, and nothing seemed to relieve them. They varied in intensity and situation and it is noteworthy that she never complained of any of the pains after the fracture of

the left arm. During the eight months she was under observation her weakness increased and became at last extreme, with marked anæmia and emaciation. No enlargement of the bones was perceptible at any time during the illness. During the last month or six weeks the temperature was generally above normal, of hectic type, varying from 99° to 102° in an irregular manner, the pulse-rate being correspondingly quickened.

Family history.—There was nothing remarkable in the family history, as the patient's parents and grandparents lived to old age and her brothers and sisters are all healthy.

Examination of the urine.—It occurred to one of us (K. F. L.), who recalled a case recorded by Dr. T. R. Bradshaw of Liverpool, that this was an instance of albumosuria, as the following analysis of the urine proves. It was pale straw in colour, at times syrupy in consistence, and forming an abundant and persistent froth on shaking; the odour was peculiarly aromatic, which was also perceptible latterly in the patient's breath. It had a specific gravity of 1019–1022 and varied in amount from 80 to 120 ounces in the 24 hours. The reaction was neutral or faintly acid. On heating in a test tube a precipitate formed which dissolved on boiling. When treated with cold concentrated nitric acid a dense curdy precipitate formed, which entirely dissolved on boiling and reprecipitated on cooling. When treated with cold concentrated hydrochloric acid a precipitate formed sometimes slowly, sometimes at once, which dissolved on boiling and reprecipitated on cooling. With a few drops of acetic acid and the addition of potassæ ferro-cyanide (10 per cent. solution) a turbidity appeared, but only on standing for some time. This precipitate (and that obtained by heating) was soluble in caustic soda or caustic potash. This solution reacted to nitric acid in the same manner as the specimen of urine before the addition of caustic soda or other reagent. The amount of precipitate present was considerable, the dense precipitate formed after addition of picric acid or nitric acid occupying four-fifths of the column of urine after standing for 24 hours. A few oxalate crystals were occasionally present. The urea was estimated as 4·15 grains per ounce. Sugar was absent but the specimens always gave the biuret reaction. In this connexion we may note that Dr. Bradshaw says:[1] "Contrary to what is generally taught I am convinced that the biuret reaction affords no indication by which we may distinguish between globulins and albumins on the one hand and albumoses and peptones on the other." A specimen of the urine was sent to Dr. Bradshaw who very kindly confirmed the tests and reported that "the proteid in the urine sent to him coagulated at 58° C. and almost entirely dissolved on boiling; but that on the other hand the precipitate with concentrated hydrochloric acid was much less dense than usual."

Necropsy.—A complete post-mortem examination was not permitted but a partial examination was made 24 hours after death. Cadaveric rigidity had not then set in and there were no post-mortem ecchymoses. The abdominal wall already showed signs of commencing decomposition. The sternum and rib cartilages, the left clavicle, and portions of the left humerus were removed. The lungs and heart appeared pale but normal. There was no fluid in the pleural cavities and no sign of recent or old-standing pleurisy. There was thickening of one of the ribs on the left side which suggested recent fracture. After removal of the fractured portion of the humerus about six ounces of a pale pink blood-stained fluid, imparting a gluey or soapy feeling to the touch, filled the cavity thus made and was reserved for examination. It apparently escaped from the sawn ends of the humerus.

Pathological report.—The tumours consisted of a round cell growth, richly supplied with blood-vessels, the connective tissue sheaths of which could be readily seen. The cells of the mass consisted of a nucleus nearly of the size of a red blood corpuscle, deeply stained by hæmatoxylin and showed only a small mass of protoplasm. The protoplasm so far as we were able to say was agranular, and Mann's stain, when used both by the long and short method, did not show anything that we were able to recognise similar to the "red bodies" described by Muir. Practically the mass had the greatest resemblance to a round-cell sarcoma. The microscopical appearance closely resembled that described by Bradshaw and Warrington in 1899 but differed in certain points from that described by Parkes Weber with Muir's report.

[1] Transactions of the Pathological Society of London, vol. li., p. 143.

Dr. Bradshaw kindly examined the fluid taken from the arm after sawing through the bone and reported that he looked chiefly for indications of the presence of the Bence Jones albumose. He says: "It is very difficult to detect it when mixed with a large amount of other proteids. I found (*a*) that some coagulation takes place on heating a watery extract of this material to about 60° C.; (*b*) that the watery extract (or solution) gives a well-marked albumose reaction on boiling with nitric acid; and (*c*) that when the solution is boiled with a little acetic acid and sodium chloride and filtered hot the filtrate becomes slightly turbid on cooling. These reactions, as far as they go, suggest the presence of albumose. I have, however, found a slight coagulation at 60° C. on heating a solution of normal bone marrow." We can only say that the analysis, particularly test (*b*), suggests the presence of albumose or some closely allied body.

Treatment.—We have said nothing as regards treatment because we discovered nothing that had any power to arrest the course of the disease. Treatment of any sort has so far proved ineffectual and we have not been able to discover any suggestion as to the course to pursue in such cases. Hæmoglobin, liquid peptonoids, iron, phosphates, &c., were all tried in rotation with equally unsatisfactory results. The vomiting generally ceased spontaneously and seemed to be due to dilatation of the stomach owing to inertia, as no pain, tumour, or tenderness was present. The diarrhœa, which, as we remarked before, was accompanied by peculiarly offensive motions, was checked by pilula plumbi cum opio with salol in cachets.

Remarks.—The points of resemblance to other cases recorded, apart from the condition of the urine, are: 1. The fragility of the bones. 2. The extreme anæmia and lassitude. 3. The pains of neuralgic character, varying in intensity and situation, aggravated by movement, and accompanied by local tenderness. 4. The presence of a semi-fluctuating tumour over the acromial end of the clavicle in connexion with the false joint. The peculiarities of the case are: 1. The fractures occurring solely on the left side. 2. The occurrence of the disease in the long bones, humerus and femur; no disease in cranial bones. 3. The absence of any prominences on the bones. 4. The sharp grating crepitus of the fractures resembling that produced by old dried museum specimens. 5. The fact that a firm union took place in one of the fractured bones—viz., the femur, although infiltrated with disease of a malignant nature. 6. The female sex of the patient. Most recorded cases have been in males.

ON THE TREATMENT OF CANCER WITH RADIUM BROMIDE.

BY H. G. PLIMMER, M.R.C.S. ENG., F.L.S.

IN November last Lord Iveagh generously placed at my disposal some radium bromide, with the request that I would investigate its effects upon cancer. The staff of the Cancer Hospital allowed me to make use of the following cases, so that I was enabled to follow the effects of the action of radium more or less completely on 17 cases which I have tabulated in a form giving a general view of the cases and the extent of the treatment. The amount of radium bromide used for these cases was 30 milligrammes and it was inclosed in a vulcanite capsule covered with talc. It was made by the Braunschweig Chinin Fabrik.

It will be noticed that this series of cases consists entirely of carcinoma, many of the cases being in a very advanced condition. The diagnosis was confirmed in all of them either by the examination of the primary growth or by the excision of a nodule. The individual exposures varied from 40 minutes to five minutes; and the capsule containing the radium was placed directly on the nodules or lumps, the only thing intervening between the radium and the skin being the talc top of the capsule. I left the cases for a month after the exposures and then examined them to see in what condition they were. The effects in all the cases were negative, either no change or an increase in the size of the nodules. Cases 3, 14, and 17 were all about to slough when they came for treatment, and there is nothing whatever to indicate that the sloughing was in any way hastened by the treatment. The effect on the skin varied in the different cases; an exposure of ten minutes was generally sufficient

TABLE OF CASES OF CANCER TREATED WITH RADIUM BROMIDE.

No.	Sex.	Age.	Nature of cancer.	Total time of application of radium.	Between dates of—	Longest and shortest time of application.	Skin.	Remarks.
1	F.	53	Three nodules on the right chest, secondary to cancer of the breast.	20 minutes.	Nov. 17th and 27th.	5 minutes.	Reddened.	The patient died on Dec. 31st. A nodule was removed on Nov. 25th to see what effect had been produced.
2	F.	42	Two nodules on the left chest, secondary to cancer of the breast.	10 minutes.	On Nov. 17th.	5 minutes to each nodule.	,,	Nodules have ulcerated and the patient is considerably worse.
3	M.	40	Sloughing epithelioma of the lip.	10 minutes.	Nov. 18th and 20th.	5 minutes.	Broke down two days after the last application.	This was a raised nodule in a diffuse epithelioma of the lip which was soft at the time of application.
4	F.	28	Multiple nodules on the chest, secondary to cancer of the breast, and a gland above the clavicle.	2 hours 50 minutes to nodules and 45 minutes to gland.	Nov. 19th and Jan. 25th.	30 minutes; 5 minutes.	Blistered and scabbed.	The gland at first seemed softer but did not diminish in size. A nodule was removed for diagnosis.
5	F.	40	Ulcerated contracting scirrhus of the breast.	25 minutes.	Nov. 19th and Dec. 22nd.	5 minutes.	Reddened.	The patient died on Jan. 23rd.
6	F.	44	Recurrent growth of the breast in and about the scar.	11 hours 55 minutes.	Nov. 23rd and Feb. 9th.	30 minutes; 5 minutes.	Blistered and scabbed.	The nodules increased rapidly in size.
7	F.	44	Gland deep in the axilla.	36 minutes.	Nov. 24th and Dec. 18th.	8 minutes; 5 minutes.	Reddened.	No change.
8	F.	80	Moveable lump in the right breast about three inches by two inches.	14 hours 25 minutes.	Nov. 24th and Feb. 10th.	40 minutes; 5 minutes.	Blistered and scabbed, at first blackish in colour, later white and scaly.	This patient showed no sign of improvement in the primary growth and an axillary gland enlarged to a good size during treatment.
9	F.	64	Diffuse mass of secondary ulcerated cancer in the right axilla.	1 hour 30 minutes.	Nov. 24th and Dec. 19th.	5 minutes.	Very thin and red before treatment.	The patient died on Jan. 11th.
10	F.	54	Cicatrix adherent to the ribs, with small nodules in it.	3 hours 45 minutes	Nov. 28th and Feb. 1st.	30 minutes; 5 minutes.	Blistered early.	No change.
11	F.	53	Diffuse mass of secondary cancer in the right axilla.	2 hours 35 minutes.	Dec. 1st and 19th.	10 minutes; 5 minutes.	Very red and angry before treatment.	The patient thought she could move her arm better but there was no change in the growth.
12	F.	63	Small nodules beneath the skin between a cicatrix and the clavicle on right chest.	1 hour 20 minutes.	Dec. 7th and Jan. 27th.	5 minutes.	Blistered and scabbed.	No change.
13	F.	60	Secondary growth in the axilla and gland above the clavicle.	3 hours 15 minutes.	Dec. 10th and Feb. 4th.	15 minutes; 5 minutes.	,,	The patient thought she could move the arm better but no change in the growth was effected.
14	M.	53	Fungating mass below the jaw, secondary to epithelioma of the lip.	15 minutes.	On Dec. 17th.	15 minutes.	Sloughing.	The mass sloughed out a few days after.
15	F.	52	Two very small subcutaneous secondary nodules near cicatrix of the breast.	3 hours 10 minutes.	Jan. 13th and Feb. 10th.	40 minutes; 30 minutes.	Blistered.	There was no change in the nodules and a new one appeared during treatment.
16	F.	60	Secondary glands in the axilla.	1 hour 30 minutes.	Jan. 18th and 25th.	30 minutes.	,,	No change.
17	F.	48	Large mass of secondary growth over the sternum, about to slough.	1 hour 10 minutes.	Jan. 21st and 22nd.	40 minutes; 30 minutes.	Reddened.	The growth began to slough.

to produce blistering, and then scabbing, and under the scabs there was found a very slowly-healing ulcerated surface. The radium had apparently no effect with regard either to causing or to relieving pain and the irritation of the blisters was slight.

From three of the above patients who died some nodules which had been treated were excised and subjected to a careful microscopical examination. In all these cases no change was found either in the cancer cells or in the fibrous tissue and none were degenerated. There appeared to be an increase in the amount of the subcutaneous round-celled exudation which was greater in amount in those nodules which had been more recently treated, but the irritation of the skin would sufficiently account for this. On the other hand, Dr. Apolant, writing from Professor Ehrlich's laboratory, records[1] some very satisfactory and striking results obtained by treating very rapidly growing nodules of inoculated cancer in mice with radium. The nodules decreased remarkably in size, but it was apparently difficult to get rid of the last bit of the nodule, probably on account of fibrous changes. These results are much the same as those obtained by Professor Exner in Vienna in a case of melanotic sarcoma with multiple rapidly growing nodules in the skin. It appears as if the emanations from radium can only act upon young and rapidly growing cells and that older cells, especially if surrounded by fibrous tissue, are less and less easily affected, and if there be an excess of fibrous tissue the cells are not at all affected.

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[1] Deutsche Medicinische Wochenschrift.

GENERAL LYING-IN HOSPITAL, YORK-ROAD, LAMBETH, LONDON, S.E.—An entertainment will be given in the small Queen's Hall, Langham-place, London, W., on the evening of Thursday, May 26th, the proceeds of which will be devoted to defray the cost of the new dining room for midwives and nurses and the new sitting room for nurses now in course of construction at the hospital. The entertainment will consist of music and tableaux-vivants. A bazaar will also be held at 40, Portland-place, W., on Friday, July 8th, and Saturday, July 9th, from 2.30 to 7 P.M., to provide funds for furnishing a home for district midwives and nurses in connexion with the hospital. Any surplus will be handed to a ladies' committee which is now being formed to assist convalescent patients requiring the benefit of a short rest in the country.

THE SITE OF REFERRED PAIN IN VISCERAL DISEASE FROM AN EMBRYOLOGICAL STANDPOINT.[1]

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FROM the clinical experience of many observers, and from a consideration of anatomy morbid and otherwise, the pains and hyperæsthesias arising from the various viscera in morbid states have been located in various regions of the parietes. I propose to approach the subject of the location of pains referred from the viscera from an embryological standpoint, and consider that many phenomena at present clinically obscure are thus elucidated.

That a viscus unilateral in origin and development has a unilateral nerve-supply is axiomatic—e.g., the ureter. It is just as clear that viscera bilateral in origin, formed by fusion of lateral structures, retain in each half their lateral innervation—e.g., the uterus. If one considers the history of some viscera hereafter referred to as median in origin, bilaterally symmetrical halves with bilaterally symmetrical nervous rudiments are traceable; a median diverticulum from such an organ will partake equally of the right and left halves and of their right and left innervation; for example, the foregut and common bile-duct. Given that the organs retain throughout their development their primitive or embryonic nervous connexions, I suggest as a working hypothesis: 1. That viscera lateral in origin and development if they give rise to pain or hyperæsthesia at all refer this to their own side of the body wall. 2. That viscera bilateral in origin but asymmetrically developed refer their pains and hyperæsthesias predominantly to that side of the body from which the predominant element, be it right or left, is derived. 3. That viscera median in origin give rise to pains and hyperæsthesias on both sides of the midline in states affecting both sides of the viscus, or if affected on one side on that side, near the midline, to which the half of the viscus in which the lesion is situated originally belonged. 4. That viscera lateral and bilateral in origin and developing symmetrically give rise to pain on either or both sides according to the situation of the lesion or other morbid state. Viscera illustrating these origins, the referred pain of which is discussed below, are: (1) ureters, testicles, ovaries, Fallopian tubes, and the aortic arch except the ascending portion; (2) ascending aorta and heart; (3) trachea, œsophagus, stomach, duodenum, bile-ducts, small intestine, appendix, large intestine, rectum, and bladder; and (4) uterus.

I will not go over ground already well covered by many observers but simply state their findings that these structures are themselves entirely insensitive to pain, and will first discuss the pains referred from the diseased aortic arch because pains whose seat is most varied afford most interest, whose cause is least known need most elucidation, and whose explanation if acceptable will give greatest support to the hypothesis.

The embryology of the aortic arch subdivides itself into that of the ascending aorta and that of the remainder. The transverse portion beyond the innominate artery and the descending arch have normal origin in entirely left-sided structures—the vessels of the left visceral arches, and according to hypothesis should have their pains referred entirely to the left side of the body. The ascending aorta has a complicated development from the bulbus arteriosus which in its turn has a simple development as being the upper portion of a tube formed by the fusion of two symmetrically placed right and left ventral vessels. Could we but estimate how much of the ascending aorta is formed from the right element of the bulb and how much from the left, we might suggest what proportion of the referred pains of acute and chronic aortitis in this situation ought to be felt on either side of the body.

The septum superius has origin from above downward, from between the fourth and fifth left branchial vessels where it is situated antero-posteriorly; at the level at which the semilunar valves will later be developed, the plane of the septum cutting the bulbus arteriosus into ascending aorta behind and pulmonary artery in front is transverse. The anterior border of this septum, in fact, has passed spirally from left to right through 90°. The bulbus arteriosus is the portion of the fused ventral vessels which most retains its primitive position, being anchored as it were above by the paired vessels passing to the branchial arches. Thus we can estimate that of the right and left elements forming the bulbus arteriosus more of the right element has been cut off in the longitudinal division which takes place to form the ascending aorta than of the left, especially just below the level of the innominate artery, while at the point of divergence of aorta and pulmonary artery the right and left primitive elements take equal share in aorta formation.

By hypothesis, therefore, pain and hyperæsthesia arising from aortitis, acute or chronic, just above the aortic ring should be referred to right and left of the midline; arteritis higher in the ascending aorta should give pain and hyperæsthesia mostly to the right. As we have seen, the arch beyond the innominate artery should give rise to entirely left-sided pain. The common form of arteritis, however, and its effects are not usually circumscribed but are found in lessening degree from the aortic ring onwards, the inflammation being started by a cause acting equally throughout the whole aorta but confirmed by the systolic shock and pressure felt in diminuendo along the artery. Seldom will atheroma be found limited to the neighbourhood of the aortic ring, yet more seldom in patches more remote while the ring remains free.

What is angina pectoris? Angina is a pain felt in the parietes, referred there from a centre in the cord irritated by afferent impulses passing along one or more visceral nerves of the first, second, third, fourth, and fifth dorsal, and perhaps some lower cervical segments. Whence do these afferent visceral nerves acquire the impulses which render their centres irritable? I quote the Regius Professor of the University of Cambridge, whose Cavendish lecture on Disease of the Ascending Aorta has so broadened the horizon in the etiology of angina pectoris. He says: "We may guess that the relation of the fibrous tissue to the nervous tissue of and about the ascending aorta may be the determining factor of pain in inflammation, acute or chronic, of these parts." So we have impulses starting in and about the ascending aorta going to the right and left segments of the cord, impulses from the transverse and descending arch (I have said that aortitis is rarely limited) irritating left-sided portions of the cord, and all that is wanting is a stimulus to start the explosion which is to run along the prepared train and give rise to the sensations so well known.

Burney Yeo in his "Manual of Medical Treatment" inclines to the view that heightened blood pressure is a result rather than a cause of anginal pain, but we can easily imagine that a slight rise of pressure—due to emotion, for instance—is a cause of sufficient afferent stimulus to initiate katabolism of nerve substance already rendered unstable, and that the effect of the resultant pain thus initiated may be a still further rise of blood pressure to the establishment of a vicious circle. However this may be, angina is felt in the right- and left-sided distribution suggested by our hypothesis, radiating more often to the left in accordance with the preponderating left embryonic origin of the seat of the causative lesion, most frequent, persistent, and intense in a bilateral sphere about the junction of the corpus and manubrium sterni, just as the origin of the first part of the ascending aorta is most active in mischief and is bilateral in origin, often radiating to the right even as the upper part of the ascending aorta has a preponderant right-sided origin. So much for the pain of angina. Burney Yeo in his "Manual of Medical Treatment" gives pictures showing hyperæsthetic spots in[2] "aortic disease." I suggest that these pictures represent the hyperæsthesias of an aortitis in which disease of the aortic ring is an incident: indeed, so-called aortic disease and aortitis are in many cases inseparable etiologically and combined clinically. If the brunt of the disease has fallen on the aortic ring and its immediate environment, we should by hypothesis expect pains and hyperæsthesias referred to either side of the midline.[3]

As to the left location of pains and hyperæsthesias which clinically with certainty may be traced to morbid conditions of the heart, we find that, as for the anterior end of the

[1] Thesis for the degree of M.D.

[2] Burney Yeo: Manual of Medical Treatment, part ii., chapter v., Fig. 14.

[3] Figs. 13 and 14, loc. cit.

fusion of the ventral vessels which forms the heart, the paired visceral arches form an anchor and are a guide to its constitution, so for the posterior end the paired umbilical and vitelline veins mark off the primitive right and left portions of the common auricular chamber. This chamber opens by an aperture, slit-like and transverse, into the ventricle: of this aperture the walls of the left end are derived from the left element and those of the right end from the right element. Later this orifice becomes divided by the ventricular septum into left and right portions, the left forming the mitral orifice, the right the tricuspid orifice. At this point we have the original left and right elements preserved in their original relation. The brunt of the commoner morbid states of the heart, by reason of the higher pressure within the left ventricle in systole, falls on the left side; in particular is the wall of the left auriculo-ventricular orifice affected and we have seen that this can be traced to be a primitive left structure. By hypothesis, therefore, pain and hyperæsthesia of mitral disease should in all cases be referred to the left side of the body wall.

Clinically this is found to be the case. I may refer to an excellent diagram of left-sided hyperæsthetic spots in a case of mitral disease given in Burney Yeo's "Manual of Medical Treatment" and suggest that many of these spots depicted are due to stimulation along afferent visceral nerves from the damaged orifice walls. Since the septa of the common ventricular chamber of the fœtal heart develop in such a way as by no means to separate the original right and left elements, I am unable to suggest in what proportion the elements are embodied in either ventricle or to suggest that some of the spots may be due to myocarditis of the left element; nor does the morbid anatomy of mitral disease, except in a later stage, permit one to consider in its connexion tracts of the heart wall remote from that originally left-sided structure the wall of the mitral orifice. As I have said, the common auricular chamber preserves the right and left positions of its constituent elements, and though the auricular septa do not seem exactly to re-divide those elements, yet, broadly speaking, the left auricle is formed from the left primitive vessel and the right from the corresponding right vessel; but as painful morbid conditions affecting the auricles alone are unknown the only use we can make of this fact here is the demonstration how the right and left position of the original elements in the auriculo-ventricular canal is preserved and may be traced.

The alimentary tract from pharynx to rectum has origin as a straight tube in the middle line bilaterally innervated. The œsophagus should therefore have its pains referred bilaterally near the middle line. The pains of stenosis of all kinds and of ulcerations are felt in the situation indicated, both sides of the viscus being usually affected; the higher the lesion the higher is the pain located in a line from the neck to the lower end of the corpus sterni. The swallowing of hot food or of a large or angular bolus is an everyday experience and the pain arising from it is felt to travel downwards, being especially acute at the lowest portion of the region mentioned which I believe corresponds with the cardiac sphincter of the stomach. I emphasise the point that these pains though median are bilaterally so in view of some conclusions to which the hypothesis has led with regard to unilateral median pains and hyperæsthesias in ulceration of the stomach.

James Mackenzie has shown that for morbid states in the stomach and small intestine the resultant hyperæsthesias are located near the midline, and especially has he demonstrated that the higher in the abdomen the hyperæsthesia the higher in the alimentary canal is the causative lesion. For instance, in a case of gastric ulcer in which the hyperæsthesia is located in the upper part of the epigastrium he finds the lesion at the cardiac end of the stomach, making his incision well to the left of the middle line; with hyperæsthesia low down in the epigastrium he searches with success the pyloric or duodenal region. From a consideration of the segmental condition of the fœtus in the vermis stage of development this seems quite what might be expected.

Now in cases of gastric ulcer resultant hyperæsthesia is often wonderfully circumscribed, as, indeed, is the lesion; a five-shilling piece or even a half-crown will cover the hyperæsthetic area at some stage in the history of the disease. Embryologically the anterior wall of the stomach is a left-sided structure and it is supplied by nerves from the left portion of the cord; by hypothesis, therefore, ulcers on the anterior wall should give rise to hyperæsthesias to the left of the midline. The commonest situation of a gastric ulcer is the lesser curvature where right and left nerves meet; this should give rise to hyperæsthesia bilaterally median. The proportion of ulcers on the left (or anterior) wall to those on the right (or posterior) is 69 to 235, and on the lesser curvature to the greater 288 to 27 (numbers taken from 793 cases collected by Welch and quoted by Osler). Of those ulcers situated on the lesser curvature it is no fanciful supposition, considering the numbers given, that there would be a preponderance of the right embryonic element in the lesion. So, taking gastric ulcer as a whole, one would expect from the hypothesis that the maximum hyperæsthesia and pain would be just to the right of the median line. The hypothesis suggests that a marked left median hyperæsthesia or seat of maximum pain is a localising symptom of lesion in the anterior wall of the stomach and that marked right median pain would point to a lesion on the posterior wall; and that were the median third of the epigastric region divided into nine equal areas the seat of an ulcer might in many cases be accurately located before operation, thus—hyperæsthesia in upper right area, lesion cardiac and posterior; hyperæsthesia in lower left area, lesion pyloric and anterior, &c.

Gastralgias without lesion have a situation in the epigastric area as vague as is their pathology and the hyperæsthesias and pains of cancer and chronic gastritis as diffuse as is their causative lesion, though a marked right or left hyperæsthesia or pain should by hypothesis locate the lesion on the posterior or anterior wall respectively.

To trace embryologically the hyperæsthesias and pains arising from the viscera will prove impossible without considering those arising from affection of the peritoneum. What has been said of the hyperæsthesias referred from gastric lesion applies to cases without peritonitis as a complication, a condition often existing in cases of gastric ulcer. The peritoneum, parietal and visceral, arises with the same left- and right-sided symmetry and innervation as does the gut. It will at once be seen that embryologically speaking the posterior wall of the stomach is in contact with right peritoneum, visceral and parietal—the lesser omental sac wall; and the anterior wall of the stomach is in contact with left peritoneum, visceral and parietal. Even extensive peritonitis therefore in stomach lesions will not affect the embryological orientation of the hyperæsthesia, though this will be spread laterally in area somewhat. In this connexion I may mention a case, of which I have lately heard, of peritonitis in the lesser omental sac from perforated ulcer on the posterior wall of the stomach; as by hypothesis it should be the hyperæsthesia was noticeably right-sided, though in the course of development the lesser omental sac is thrown to the left of the median line.

What has been said of stomach ulceration applies to duodenal ulceration, though here in a small viscus right and left sides are not so easily distinguished and even a small lesion is liable to invade both sides of the tube and give rise to bilaterally median pain. The posterior wall is right embryonically. As a matter of fact, duodenal ulceration is usually on the posterior wall and the referred pain to the right of the median line; this is as it should be by our hypothesis.

Lesions of the small intestine or temporary abnormal conditions of this part of the bowel usually affect its whole circumference. Any resultant pain or hyperæsthesias should therefore be most intense bilaterally about the median line. Mackenzie gives as an illustration of the vertical distribution of intestine pains those arising from dietetic error. The descent in level of the pain in the abdominal wall is felt *pari passu* with the descent of the offending matter. With pain in the epigastrium relief by vomiting is possible, with pain in the umbilical area the hopeless feeling of "having to go through with it" is experienced; when the pain descends in the hypogastrium rejection per anum becomes a recognised possibility and eventually imperative. The pain throughout the attack is bilateral about the median line, though in intenser paroxysms, as is the case with all these gut pains, the pain extends into lateral regions and vertically. Meckel's diverticulum gives us an embryonic point which should correlate the small intestine save the last 43 inches with abdominal parietes above the umbilicus. The small intestine in its latter three feet and over is developed below the communication of the primitive gut with the yelk sac and its corresponding

parietes will be situated below the umbilicus. On embryological grounds therefore we should look for any hyperæsthesia due to typhoid ulceration in a bilateral region below the umbilicus. I have demonstrated clinically that in the second and third week of typhoid fever in some cases there is a bilateral region of hyperæsthesia well localised in the lower half of the umbilical region. The large bowel would seem to take an inordinate share of the parietes for the manifestation of its grievances as compared with the small—nearly the whole of the skin and musculature about the midline below the umbilicus; but, as marked off by the outgrowth of the cæcum in the early fœtus, it will be seen to have nearly equal importance as to length with the future small intestine.

The intenser pains arising in connexion with these structures median in origin radiate into lateral regions, as also they do with less intensity in a vertical direction. Now if the lateral skin regions corresponding embryologically with the large intestines are those which cover the legs and the corresponding muscles are leg muscles, embryology would lead us to suppose that just as the abdominal muscles are thrown into tonic spasm and the abdominal skin in lateral as well as median regions rendered hyperæsthetic at the height of small intestine colic, so their homologues of lumbar and sacral innervation, the muscles and skin of the legs would be affected by radiation in intense colic of the large intestine. These pains in the legs—cramps—are often associated with abdominal pains and diarrhœa. I have lately carefully observed a case in which aching pain arising from internal piles—structures in themselves painless unless they have invaded the junction of proctodeum and hind-gut—was felt in the cutaneous distribution of the second, third, and fourth sacral nerves bilaterally.

Grave interest attaches to the embryology of the diverticula of fore and hind gut, in that it affords an explanation of the site of their pains and separates these pains from those due to complications in a way that cannot fail to have practical bearing. Surveying the embryology of the diverticula as a whole the trachea is a median diverticulum; since it quickly develops a right and left bronchus with their right and left innervation I need not insist on the right- and left-sidedness of this median tube. The common bile-duct arises from the fore gut anteriorly as if drawn out in continuity with a right and a left bile-duct around which the liver originates; this stamps the median bilateral nature of this duct. The typhlon is unpaired throughout, from its first appearance to its adult vestigial state, as is also the pancreatic duct, but the latter originates from exactly the opposite face of the gut to the bile-duct. I read the origin of these ducts in the light of the also unpaired cavity of the allantois which gives rise to the obviously median and bilateral bladder and in the light of that apparently cardinal law of origin of organs which applies alike to the begonia leaf and to the human liver—bilateral symmetry. Whether the cystic duct and the gall-bladder—diverticula of a diverticulum—are also median and bilateral in origin, embryology does not say, but on the basis already used I incline to the belief that these are indeed median and bilateral in origin.

A complication of the simple state of the origins of the bile and pancreatic ducts occurs in their further development in that these eventually open by a common aperture into the intestine, though originally on opposite faces of that tube. Taking the typhlon first in its pathological states the usual incitement to colic in the gut acts on this piece of developmental and structural gut, giving rise to pain and tenderness of a nature that should, and does, appeal to the laity as "stomach ache" and that in a site in the parietes depending on the origin of the typhlon. We have seen that the typhlon is median and bilateral in origin and it is developed below the site of Meckel's diverticulum where such exists. Therefore by hypothesis its pains and hyperæsthesias should be bilateral about the midline and situated below the umbilicus.

A colic arising in the umbilical area below the umbilicus of the nature of "stomach ache" is precisely the clinical phase of an attack of appendicular colic; if the conditions which lead to such an attack, which are just those which cause inflammation of the appendix, do not produce this latter result the phenomena are liable to lead to misdiagnosis and to the summary dismissal of the case to that group of uninteresting etiology yclept "stomach aches." In my own short experience I have met with two such cases where repetition of the attack and subsequent inflammation of the appendix and spread of inflammation to the peritoneum gave the clue to that diagnosis which I in similar cases now hold in view from the first. This pain of appendicular colic is rarely absent in cases of appendicitis. The cases without colic are dangerous, as perityphlitis is apt to occur without the danger signal of bilaterally median pain below the umbilicus, though if sought for I think a bilateral hyperæsthetic area would be found in this situation. The reason for right-sided pain and hyperæsthesia arising in connexion with appendicitis lies in the shifting of the peritoneal attachment of the cæcum and appendix with that of the ascending colon to the right, bringing the appendix into close relation with structures of right-sided origin and innervation, to wit, the peritoneum and subjacent tissues of that side; for appendicitis so-called is not appendicitis only nor chiefly. Treves, in his "System of Surgery," significantly speaks of perityphlitis, leaving appendicitis proper out of consideration as merged clinically in its own effects. However, in most first attacks, at the onset of each recurrent attack, and in some slight cases throughout bilateral median pain due to the appendix proper is the rule and is entirely in accord with the embryology of the viscus in which the attack originates. C. W. Mansell Moullin considers the initial pain of appendicitis to be due to the peristalsis of the appendix dragging on its mesenteric attachment.

Mackenzie cites a case of resection of bowel for umbilical hernia, without general anæsthesia, in which the upper end of the severed bowel contracted more than once whilst lying on a hot cloth; at each contraction the pain of colic was felt by the patient who referred this pain to the parietes. The circumstance would seem to preclude traction on the mesenteric attachment. It is true that the gut wall has no sensory nerves, but it is far less hypothetical to suppose that afferent nerves (not sensory), which it certainly does possess, give rise to referred pain, than to attempt to ascribe the pains of contracting gut throughout the length of the intestine to traction on the mesenteric attachment to the body wall. Mansell Moullin says[4]: "I have known even the slight pull caused by placing a ligature around a protruding portion of the colon bring on an attack of colic"—this as an instance of pain caused by a drag on the mesenteric attachment. It is my opinion that the ligature produced a spasmodic contraction of the bowel which gave rise to its own referred pain. It is beside the subject to query the same writer's view of the significance of McBurney's point and of a similar point posterior in situation.

Morbid states of the common bile-duct, since the duct is median and bilateral in origin and developed above the seat of Meckel's diverticulum, may be expected to give rise to bilaterally median pains and hyperæsthesia above the umbilicus. In cases of gall-stone colic we have an analogy with cases of appendicular colic, and the median pain in the upper region of the umbilical area is never wanting, but gall-stone colic being generally an incident in a long-standing cholelithiasis, which in its turn may be but the result of morbid states of the hepatic apparatus, often gives rise not only to its own pain but to right-sided pains to which further reference will be made. I have myself met with two marked cases of gall-stone colic in which because of entire absence of right-sided pain gastritis was diagnosed, and the diagnosis was changed only by the course of subsequent attacks. A recognition of the fact that the common and cystic ducts are median in origin and bilaterally innervated, and should in accordance with the hypothesis give rise to pain bilaterally about the median line above the umbilicus, will concentrate the attention of the clinician in such cases on the exact area of the pain and of its maximum intensity and through this on that piece of gut which is the true offender.

The explanation of the right lateral pains coupled with gall-stone colic recorded in the greater part of the older literature of the subject, especially in text-books, and inextricably confused with the median bilateral pain, is that those are effects of complications, effects of morbid states induced in structures largely right-sided in origin either prior to the first attack of colic or often as a result of the first attack. After one or two attacks of obstruction and resultant inflammation have set up peritonitis about the duct, or in active cholecystitis or cholangitis at the time of an attack, pain would be referred to right regions of the body wall supplied by nerves from centres irritated by splanchnic afferent impulses passing from right lateral areas of peritoneum and subjacent tissue.

By hypothesis the pains and hyperæsthesias arising from

[4] THE LANCET, August 22nd, 1903, p. 514.

the pancreatic duct should be bilaterally median above the umbilicus and in the umbilical area. This is not at variance with clinical experience. The hyperæsthesia of tracheitis, commonly known as "rawness in the chest," bilateral about the midline from the larynx to the level of third rib cartilages, is a matter of common experience. The pains arising from the bladder affections are mostly connected either with active spasmodic contraction or with passive resistance to over-distension; both sides of the bladder are generally concerned and its pains are bilaterally median as they should be in accordance with the bilaterally median origin of the allantois. It has more than once been hinted that where peritoneum is involved in a morbid state of a viscus referred hyperæsthesia is located in the right or left situation corresponding to the origin of that part of the peritoneum. This statement is not affected by the controversial point as to the direct sensibility of parietal peritoneum.

Of structures unilateral in origin I have little to say in support of my hypothesis: the clinical evidence is too clear to need discussion. The referred pain of ureteral colic is markedly lateral; that of the testis on which pressure is exerted no less so in the groin of its own side. The only viscus lateral and bilateral in origin and symmetrically developed, for discussion, is that resulting from the fusion of those originally lateral structures, the Müllerian ducts.

The pains of labour referred from the contracting uterus to the abdomen and back are well known. I will only draw attention to the fact that they are bilateral in order to emphasise that though bilateral they are not bilaterally median, as are the pains due to structures which I have designated median in origin. The halves of the uterus give rise to lateral pains, which, indeed, may fuse in the midline; the halves of the intestine give rise to pains about the midline which in their intensity may radiate into lateral regions. As to the pains and muscular contractions in the legs which so frequently appear in the course of labour these, which are homologous with the cramps of the legs in severe colic of the large intestine, are reflex pains set up in structures of the same segmental innervation as that of the Müllerian ducts. It seems inconceivable that so clumsy and dangerous a condition of affairs would have been perpetuated evolutionally were pressure on nerve roots in the pelvis the cause of these common cramps.

It is within the scope of this essay to speculate on those comparatively infrequent cases where the pain of stone in the pelvis of the kidney on the one side is felt on the opposite side and why, as I have observed, a patient may be operated on for appendicitis when only a ruptured left Fallopian tube is found to account for the pain felt on the right side. Is the pain felt in these cases really due to the lesion found? I would suggest that in such cases were fuller search made some structure in close relation in origin and development with the fellow to that in which the lesion exists may itself be found to be in a morbid state, giving rise to no pain but throwing the cord of its own side into an irritated condition by constant afferent impulses, a condition which if interfered with by an impulse transferred across the cord might readily give rise to pain. So correlated in origin and innervation are ureters, testicles, ovaries, spermatic cords, and Fallopian tubes. For instance, the right Fallopian tube being in a morbid state and a stone irritating the pelvis of the left kidney sufficient impulse might be transferred across the cord to explode a right sided irritability due to the Fallopian tube to the overshadowing of the pain due to the stone on its own side.

As my thesis has developed itself two points of interest have come into view. The one is that, leaving out cases in which peritoneum has been involved in the lesion and has complicated the pains, the pains due to structures referred to as median are distributed in the regions of the anterior cutaneous nerves in their maximum intensity and are often confined to those regions, while originally lateral structures give rise to referred pain in lateral cutaneous branches of the segmental nerves or their homologues. The same median and lateral distribution of referred pain when felt in the dorsal regions is observed. Viscera originating in the lateral mass have their afferent nerve fibres in close relation in the cord with those of lateral cutaneous branches; while median structures developed beneath the splanchnopleure have their afferent fibres correlated more closely in the central nervous web with anterior fibres of the segmental nerves. As to the significance of this I can only put forward the protective theory of the origin of pain as suggested by James Mackenzie, but if the protective theory of the origin of pain be correct it were obviously better had viscera median in origin preserved their state of the vermis stage of development median and unconvoluted and that lateral organs had never changed their position relatively to the body wall.

The parietal peritoneum with its uncomplicated orientation, be it sensitive or insensitive to direct stimulation, is only a partial corrective to the disturbance that has taken place between the relations of the visceral seat of lesion and the seat of resultant sensation in the body wall since the vermis stage of evolution. As I have shown in dealing with the medley of pains referred to the umbilical region, in that specially protective sense of leading to a rapid diagnosis the peritoneum often gives its lead all too late in the disease.

The other point is that, as regards pains, I have perforce dealt throughout with structures into the composition of which unstriped muscle tissue largely enters and that pain as opposed to hyperæsthesia is generally noticeable when that tissue is carrying out its function strenuously, either whilst in an abnormal condition or with an unusual incentive. The connexion between the working of the muscle and the production of the pain is very obvious in cases where such a cause as a pull on a mesenteric attachment is out of the question; it is on the ground of the generality of this element of muscular stress or strain in visceral pain that I reject as unnecessary a cause referred to one viscus which will not apply to another exactly comparable one. I suggest that the origins of the afferent impulses leading to pain are inherent in the nervous connexions in muscular tissue under stress or strain.

To conclude on the main subject matter. My postulate on the preservation by viscera of their embryonic nervous connexions is far from unreasonable or indefensible and my hypothesis, save where it offers suggestions to the clinician, is amply borne out by clinical facts. There appears to be a good case, when searching for hyperæsthesia, when questioning as to pain and when drawing conclusions, etiological or diagnostic, from the sensory phenomena of morbid visceral states, for the utility of taking hints from embryology on the lines laid down.

Gravesend.

ON SO-CALLED INTRA-UTERINE CRETINISM AND ITS SUPPOSED IDENTITY WITH ENDEMIC AND SPORADIC CRETINISM.

BY DR. MED. H. BAYON,

ASSISTANT PHYSICIAN AT THE CLINIQUE FOR MENTAL DISEASES, WURZBURG.

THE object of my present communication is to show that up to the present time there is no conclusive proof for the occurrence of intra-uterine cretinism and that the cases which on different occasions have been published under this title[1] are to be reckoned as appertaining to the fœtal bone disease generally known as chondrodystrophia fœtalis or so-called congenital rickets. I base my conclusions on microscopical sections of the bones of cases of chondrodystrophia fœtalis and cretinism which are to be found in the museums of the Pathological Institute and Clinique for Mental Diseases here, as also on slides which were kindly supplied to me through Professor Langhans of Berne (Switzerland) and on the results of the experiments of Hofmeister.[2]

Dr. J. W. Ballantyne had occasion at the seventieth annual meeting of the British Medical Association to point to the bewildering confusion which is caused by a too numerous nomenclature in fœtal bone diseases, especially where most of the terms employed are simply synonymous. What, since the appearance of Kaufmann's monograph in 1892, now generally carries the name of chondrodystrophia fœtalis has been called or described as achondroplasia, chondromalacic micromelia, fœtal rickets, so-called fœtal rickets, intra-uterine rickets, micromelic rickets, annular rickets, chondritis fœtalis, pseudo-chondritis, osteogenesis imperfecta,

[1] THE LANCET, Feb. 9th, 1884, p. 252; Brit. Med. Jour., Sept. 12th, 1896, p. 620; Barlow, Transactions of the Pathological Society of London, 1891.

[2] Beiträge zur Klinischen Chirurgie, 1894, Band xi., S. 441.

congenital or intra-uterine cretinism, cretinoid dyspinsia, osteoporosis, osteopsathyrosis, periosteal dysplasia with osteopsathyrosis, and defective enchondral ossification. Ballantyne has adopted the nomenclature which Kaufmann made use of and makes accordingly a distinction between the following subdivisions of chondrodystrophia fœtalis—viz.: (1) hyperplastica; (2) hypoplastica; and (3) chondromalacica. The typical appearances of these three different diseases have been sufficiently clearly given by Kaufmann and Ballantyne.[3] I will therefore without delay settle the question which I have undertaken to explain.

Since Virchow first described a specimen of chondrodystrophia fœtalis hypoplastica and came to the conclusion that it was a "new-born cretin,"[4] there has been the utmost difficulty in separating this disease from cretinism, especially as nobody dared to question Virchow's authority on the subject—in fact, the greater part of the following cases were described as "cretinism" and some authors went even so far as to refuse to acknowledge undoubted cretins as such when they did not present the features of Virchow's famous "neugeborne cretin." Having had by lucky chance the very identical specimen of Virchow in my possession I proceeded to make slides of the epiphyses and found on examination, as I expected, at the junction with the diaphysis a layer of connective tissue continuous with the periosteum. This was sufficient to stamp the case as chondrodystrophia fœtalis hypoplastica. In the bones of cretins one never finds such a fibrous cap over the end of the diaphysis; the bones of cretins have only this peculiarity—viz., that their ossification takes place exceedingly slowly, exactly as with infantile myxœdema and infantile dwarfs—i.e., dwarfs whose puberty is greatly retarded. In one of my previous papers I was able to give the radiographs of the hand of a patient, aged 12 years, suffering from infantile myxœdema in whom the ossification corresponded to the conditions of a child scarcely three years of age. In the museum of the clinique here there is the skeleton of a cretin who was 32 years old and whose pelvis is separable into the three parts (pars sacralis, iliaca, et pubica) which begin to be united at the age of six years. Even microscopically there is no great difference to be found between the bones of children whose real age corresponds to the apparent age of the cretins. The identity, from an etiological point of view, of sporadic and endemic cretinism and myxœdema has long ago been settled through Semon and Kocher, and if this fact has not had the unanimous agreement of all authors it is simply owing to the opinion that the small stature of endemic cretins was due to their cartilages becoming too soon ossified. The x rays have now shown the contrary to be the case, so that nowadays no serious objection can be brought forward to shake Semon and Kocher's theory. Cretins, sporadic and endemic, are nothing more or less than undeveloped children with the typical puffiness and intense apathy of myxœdema. On the other hand, cases of chondrodystrophia fœtalis, if they happen to grow up, which, though rarely, does sometimes occur, are as regards mental faculties perfectly normal and on a par with their surroundings and differ from other people only in this—viz., that their legs and arms are very short and stunted.[5] This shortness is simply caused through the above-mentioned strip of fibrous matter pushing itself between the diaphysis and the epiphysis and thereby putting a stop to further growth of the bone shafts. These points would be already sufficient to make a relation between cretinism and chondrodystrophia improbable. To this must be added that though up to the present time one has always found unquestionable pathologic changes in the thyroid gland of all cases of cretinism which have been carefully anatomically examined, this has never been so in the case of chondrodystrophia fœtalis.

I must now mention the experiments of Hofmeister, as they have often enough aroused the opinion that chondrodystrophia and cretinism bear some relation to each other. Hofmeister performed thyroidectomy on several rabbits of various ages and found that in the diaphysis of the operated animals the cartilage cells, instead of being arrayed in regular rows as usual, were apparently thrown about in the field of view. As this is also to be seen in chondrodystrophia fœtalis he came to the conclusion that this disease after all was only one dependent on loss of function of thyroid gland—i.e., cretinism. To this point the following objection must be raised, that the typical layer of connective tissue, continuous with the periosteum, never appeared at the junction of the diaphysis and epiphysis in any of the animals upon which he experimented, and that, moreover, a certain degree of "désarroi" does appear in the rowsof the cartilage cells in all diseases of the bones without being typical for any one of them.

In conclusion, from all we know up to the present time of the function of the thyroid gland we must deduce that its loss brings on (1) general arrested development and (2) myxœdema. Both of these symptoms are wanting in chondrodystrophia fœtalis, in which disease we find simply short arms and legs, probably following inflammation of the cartilages during intra-uterine life. None of this is to be found in cretinism, therefore the two diseases are distinct units.[6]

[3] Brit. Med. Jour., Sept. 27th, 1902, p. 951.

[4] Gesammelte Abhandlungen, p. 975, Fig. 38.

[5] It will interest the readers of Dickens's works to be informed that Miss Mowcher in "David Copperfield" is a typical case of adult chondrodystrophia hypoplastica.

[6] I also believe that the "Cretinism in Calves," which Seligmann describes in the Journal of Physiology, 1903, vol. xxix., is only chondrodystrophia fœtalis after all.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF PNEUMOTHORAX WITH RAPID RECOVERY.

BY EDWARD FRANCIS COGHLAN, M.R.C.S. ENG., L.R.C.P. LOND.,

RESIDENT MEDICAL OFFICER TO THE CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST.

THE following case, owing to the unusual course it ran, seems to me to be worthy of record.

The patient, who was a man, aged 38 years, was admitted to the City of London Hospital for Diseases of the Chest on Oct. 21st, 1903, suffering from difficulty in breathing. The history he gave was as follows. He had been attending as an out-patient at the hospital since 1897 for cough, expectoration, and occasional hæmoptysis, but with the exception of one interval during which he had been an in-patient at the hospital he had been able to follow his occupation as a clerk. Until some ten days before admission he had been in his usual health, but about that time the cough returned and there was also a little blood-stained expectoration. On Oct. 17th, after a violent fit of coughing, he noticed himself becoming short of breath and about the same time he felt a "tapping sensation" behind the sternum and also heard a noise inside his chest on the left side which he compared to the sound of a pot boiling. On the 18th he felt the dyspnœa becoming worse and on the 19th it was so bad that he could not go to his work, although he attempted to walk there. He then sent for a medical man who advised him to seek treatment at the hospital.

At the time of admission his general strength was fairly good and, though he complained of dyspnœa and could not lie on his left side, he was not suffering from much distress. On examination of his chest some impairment of movement was observed on both sides, but while the right side showed some power of expansion, on the left side there was merely an elevation of the thoracic wall when he breathed deeply, no definite expansion being present. On palpation of the left chest behind vocal fremitus could be made out from the apex to the base over an area of three or four fingers' breadth parallel to the spine; over this area the percussion note was found to be impaired, the breath sounds were somewhat harsh, and vocal resonance was present. On palpating and auscultating over the remainder of the left chest it was found that vocal fremitus, vocal resonance, and breath sounds rapidly diminished and were soon lost as the examination was made at a short and then at a moderate distance from the areas of diminished resonance, but on percussion over this portion of the left chest the note was hyper-resonant. On examination of the heart the apex beat was not palpable; no area of cardiac dulness could be mapped out (being replaced by a hyper-resonant note) and

the heart sounds were very faintly audible to the right of the sternum. On the right side there were signs of consolidation of the apex in front and doubtful cavity signs behind. The interpretation of the physical signs on the left side was as follows. The presence of breath sounds, of vocal resonance, and of fremitus in the dull areas mentioned above showed the presence of lung in those areas; their absence over the hyper-resonant area suggested the absence of lung in that area. In other words, the left lung was in a state of collapse and the hyper-resonant note suggested that air was the cause of the collapse, especially as the area of cardiac dulness was replaced by hyper-resonance. But for air to cause a collapse of the lung it must be free in the pleural cavity; there was no external wound and so it could not have reached the pleura from without, consequently it must have done so from within. There was nothing to suggest that an air-containing viscus in the abdomen had opened into the pleura but there was evidence of lung disease, so it seemed that the free air had escaped from the lung into the pleura and so caused the collapse of the lung—in other words, the case was one of pneumothorax. An x-ray examination made by Dr. Hugh Walsham showed the left lung to be collapsed against the spine and also showed transmitted pulsation, and a transparent area corresponding to the air free in the pleural cavity could be made out. Dr. Walsham also took an x-ray photograph which showed (1) the displacement of the heart and mediastinum to the right side and (2) the line of collapsed lung and the transparent area extending from the apex to one of the lower ribs. The diagnosis of pneumothorax was therefore confirmed.

The patient was kept in bed and his symptoms rapidly changed for the better, so that he was able to leave the hospital much improved after a stay of six weeks. A week after admission another x ray photograph was taken[1] and it showed a return of the heart to almost, but not quite (as could be demonstrated by percussion), its normal position; it also showed the re-expanded lung with tuberculous infiltration and a small cavity at the extreme apex. The breath sounds, the vocal resonance, and the vocal fremitus could also be made out all over the left thorax, proving therefore that the lung had expanded. In addition to the above it was noted that in the upper quarter front and back the vocal resonance and the vocal fremitus were more marked than normal and there was prolongation of expiration with some medium-sized râles showing that this part was already infected. On the right side there was not any change of importance to note.

The following points in the case are worthy of special attention.

1. It is interesting to note the comparatively small amount of distress that the patient had. This might be explained in two ways: either the opening in the pleura was valvular and allowed small quantities only of air to escape at a time or else the pneumothorax was only an incomplete one.

2. It is also interesting to note the extreme rapidity of recovery, the patient's mediastinum having regained nearly its normal position at the end of the week. This observation was verified by Dr. Harrington Sainsbury and Dr. Walsham.

3. Another point of interest is that there was no evidence of fluid, for there was never any splashing nor could any fluid be made out by means of the x rays.

4. The case illustrates how important it is in the diagnosis of chest disease to recognise the dislocation of the various thoracic viscera. The diagnosis in this instance largely rested on that fact. The bell sound was entirely absent throughout the case.

I have to thank Dr. Sainsbury for permission to publish the case and also Dr. Walsham for the x-ray photographs.

A CASE OF FRACTURE OF THE SKULL BY CONTRE-COUP; RECOVERY.

BY ANGUS E. KENNEDY, M.R.C.S. ENG., L.R.C.P. LOND.

GENUINE fracture by contre-coup is rare and recovery after it is so rare that the following case seems worth putting on record.

In the early part of 1903 a boy, aged 12 years, at Cleggan in Co. Galway was kicked by a horse over the right coronal suture; a compound depressed fracture resulted and the orbital plate of his right frontal bone was torn from the orbital margin and its sharp edge could be felt below the upper eyelid under the protruding conjunctiva. Two months after the accident he was brought to London by the kindness of Sister Katherine and I saw him. His cerebral functions were at that time perfect so far as could be discovered. On the vertex there was a depression with a stellate scar. His upper right eyelid bulged and pulsation could be seen through it. Below the lid the protruding conjunctiva could be seen and the sharp orbital plate could be felt under it and could be moved up and down. The globe lay over the lower lid disorganised but intact and was almost hidden by the conjunctiva. I carefully excised the globe and the protruding conjunctiva, but did not expose the actual edge of the orbital plate, as I saw no way of fixing it or of preventing subsequent hernia cerebri.

The result is very good; the upper lid has sunk back and the pulsation is no longer visible through it though it can be felt; the brain seems to occupy the whole orbit and the appearance is like that of a boy with exaggerated ptosis.

Plaistow, E.

[1] The paper was accompanied by two admirable skiagrams which if reproduced would have occupied a considerable space. They quite corresponded with the description of them given by the author.—ED. L.

A NOTE ON THE TREATMENT OF SCIATICA.

BY ARTHUR H. BOSTOCK, L.R.C.P. LOND., M.R.C.S. ENG.

WHILE house physician at St. Bartholomew's Hospital I was much struck with the number of cases of sciatica which were not amenable to ordinary methods of treatment and the object of this note is to recommend the use of a remedy to which I have now given a thorough trial. It has been of most use in the cases of true neuralgia, which in my experience are the commonest, but it has not acted quite so well in the cases associated with a rheumatic diathesis. The drug is phenalgin (ammonio-phospho-phenylacetamide), prepared in two and a half grain tablets by the Etna Chemical Company, New York, and is obtainable in England, for dispensing purposes only, from Mr. E. J. Reid, 11, Dunedin House, Basinghall-street, London, E.C. The dose is from five to 20 grains and I find that this substance so given has no depressing action on the heart, neither does it expose the patients to the risks incurred in the use of such analgesics as opium and morphia. When a case is in the acute stage the patient should be placed in the recumbent position and poultices should be applied locally. A commencement should be made with phenalgin in a dose of ten grains, repeated every three hours. After the first 24 hours, if the drug is acting, I reduce it to ten grains (four tablets) three times a day and next day to three tablets (seven and a half grains) three times a day. I then leave a few tablets with the patient to take a dose of ten grains should the pain show a tendency to recur. In my experience doses consisting of less than three tablets (seven and a half grains) are of no use at all.

Chichester.

A Mirror of HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

QUEEN'S HOSPITAL, BIRMINGHAM.

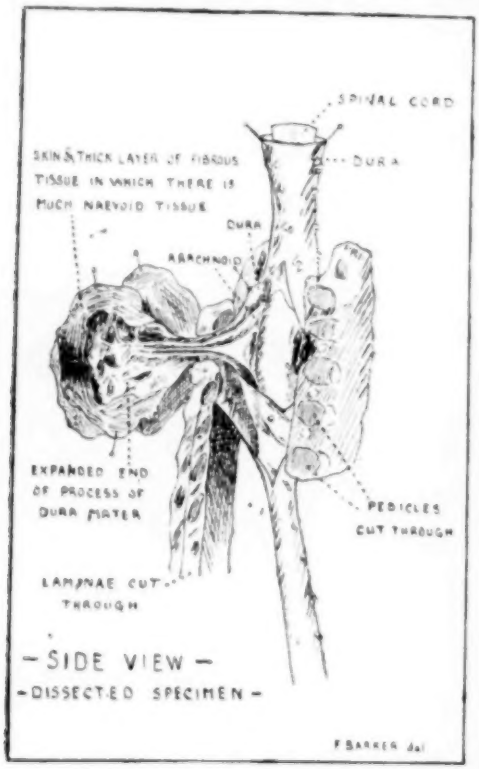
A CASE OF AN UNCOMMON FORM OF SPINA BIFIDA.

(Under the care of Mr. W. BILLINGTON.)

FOR the notes of the case we are indebted to Mr. Frederic Barker, house physician.

The specimen which the accompanying illustration depicts was taken from the body of a male child, aged seven months, who was admitted to the Queen's Hospital, Birmingham, under the care of Mr. Billington, for the purpose of having a small tumour removed from the upper dorsal region of the

back in the middle line. The lump, almost sessile but narrowing slightly to form a short stalk, was regarded as a nævolipoma; it was covered with wrinkled skin and was soft and doughy, not fluctuating, and of about the size of a walnut. Within the stalk a cord could be felt running forwards between the first and second dorsal spines. No interval could be felt in the laminæ of the adjacent vertebræ. The condition seemed to be one of spina bifida occulta, in which peculiarities of the skin, such as moles, wrinklings, hairs, &c., are common. On the day following admission the temperature went up to 103° F. Operation was out of the question; the high temperature continued and there were physical signs of broncho-pneumonia, to which the patient succumbed four days after admission into hospital.



The illustration represents a side view of the spinal cord and tumour with their connexions dissected out. It was found that the cord within the stalk consisted of a narrow offshoot from the dorsum of the cord, together with prolongations of the meningeal coverings. The central nerve element of the stalk was widest vertically near the cord; it sprang from the columns of Goll and lay over the postero-median groove. Emerging between the spines of the first and second dorsal vertebræ the dura mater widened out in the tumour to form a cystic structure with irregular translucent-looking walls, on which the arachnoid and the central part of the stalk lost themselves. The superficial part of the tumour was one-quarter of an inch in thickness and was made up of skin and fibrous tissue in which there was also nævoid tissue. The laminæ of the first and second dorsal vertebræ were both somewhat deficient in osseous growth. The cartilaginous spine of the upper vertebra was large and both were slightly bifid towards the stalk, though there was no complete median hiatus. The narrow central slip from the cord has not been further dissected; probably it contains very little true nerve tissue. The arrangement of the posterior roots was not altered. The specimen was looked upon as a meningo-myelocele, though, as Dr. Stanley Barnes (who performed the necropsy) suggested, imagining the narrow nerve stalk to contain a potential canal connecting the external cyst with the central canal of the spinal cord the condition must be regarded as a modified syringo-myelocele, itself an extremely rare phenomenon.

Remarks by Mr. BARKER.—It is interesting to compare the above with a case described by Mr. H. H. Clutton.[1] The sac in that case, which was clinically like a simple meningocele, was found to contain nerve tissue, dura mater, and arachnoid. Mr. S. G. Shattock, who reported on the post-mortem specimen, said that the protrusion consisted "not only of the spinal membranes, but of the cord extruded by a dilatation of the central canal." He termed it a meningo-myelocele. Comparison can also be made with Specimen 22 referred to by the Clinical Society's committee on Spina Bifida.[2] The present specimen, which is now in the Pathological Museum of the University of Birmingham, is uncommon also in its position. Out of 236 cases described by the Clinical Society's committee only 14 (or 5·9 per cent.) were noted in the dorsal part of the spine. Of the 125 pathological specimens only 7·2 per cent. were in this situation. Cases occurring in the dorsal, and especially the upper dorsal, spine are all the more interesting when we consider that the medullary folds of the embryo first join in this region. During life there were no symptoms or deformities which could be ascribed to the tumour or to its connexions. I am indebted to Mr. Billington for permission to publish these notes.

LEEDS GENERAL INFIRMARY.

A CASE IN WHICH A GALL-STONE WAS REMOVED FROM THE GALL BLADDER; SUBSEQUENT DEVELOPMENT OF MALIGNANT DISEASE OF THE GALL-BLADDER; DEATH FROM SUPPURATIVE CHOLANGITIS.

(Under the care of Mr. R. LAWFORD KNAGGS.)

A SPARE woman, aged 69 years, who looked, and expressed herself as being, very healthy, was admitted into the Leeds General Infirmary on Sept. 8th, 1902. She had never had any trouble with her digestion or her bowels except some slight diarrhœa two years previously. Seven weeks before admission she felt pain in the right hip which "let her down" when she walked. The pain gradually mounted higher till it was felt over the lower ribs and a medical man discovered a tumour in the right loin. She had never been jaundiced or had any attack of severe abdominal pain and she had lost no flesh. She had a goitre of long duration which caused no trouble. On examination a smooth, rounded swelling was found in the right lumbar region. It was evidently attached to the liver and was regarded as a distended gall-bladder which from its mobility was free from adhesions. A tender spot was always to be found on pressure at a point midway between the umbilicus and the tip of the ninth rib and a gall-stone impacted in the cystic duct was diagnosed. The urine was normal.

On Sept. 11th the patient was anæsthetised and an incision was made over the gall-bladder. This, much elongated and distended to the size of a fist, was drawn out of the wound and a quantity of foul-smelling fluid with some pus was evacuated by the aspirator. A single stone was felt in the cystic duct and was squeezed back into the gall-bladder and removed. It was of about the size of a nutmeg, oval and not faceted. The gall-bladder was very long and supple and not noticeably thickened. No suspicion of anything abnormal was raised by the examination of the cystic and common ducts which was made in the routine manner. An india-rubber tube to carry away the bile was now fixed in the gall-bladder which was then attached to the aponeurosis, but owing to its length its terminal portion was allowed to lie above the aponeurosis and between the lips of the incision through the soft parts. From this circumstance the fistulous opening failed to close in the ordinary way but the amount of bile that came from it steadily diminished and became so trivial that it proved to be no discomfort to the patient. Consequently no thought of doing anything to close it was entertained. The following report upon the fluid removed from the gall-bladder was made by Dr. J. A. C. Forsyth: "On agar there was an active growth in five hours. At the end of three days culture examined. Foul odour noticed on withdrawing plug from tube. Film preparations show bacillus coli communis in pure culture."

The patient left the hospital on Oct. 19th. She was

[1] Transactions of the Clinical Society of London, vol. xix.
[2] Ibid., vol. xviii.

seen from time to time as an out-patient and except for the fistulous opening discharging a very little bile she was quite well. About the end of 1903 she came complaining of pain in the right hypochondrium. She stated that the fistula had closed and that the pain began as soon as the discharge had ceased. Some thickening under the skin around the cicatrix of the fistula was to be felt but this was attributed to the redundant portion of the gall-bladder which had been allowed to remain in the wound above the aponeurosis. For two or three weeks she continued to attend as an out-patient but the pain then became so continuous and so distressing that she was glad to consent to the fistula being re-established. During this time she lost flesh. She was re-admitted on Jan. 23rd, 1904. The urine was normal. On the 26th she was anæsthetised and a small incision was made into the gall-bladder over the closed fistula and the mucous membrane was sutured to the skin. A considerable quantity of mucus with some purulent dregs escaped but no stone could be felt with a probe. The intense pain was relieved by the operation but the patient did not seem to recover her spirits. On Jan. 28th she had a rigor and the temperature rose to 105° F. She had another rigor on the 29th (the temperature being 102°) and on Feb. 4th the temperature rose to 103° and gradually fell but with these exceptions the temperature kept about the normal throughout. The pulse varied from 72 to 100 but it averaged from 80 to 90. Two or three days after the first rigor jaundice was first noticed and marked tenderness on pressure was present in the middle line above the umbilicus. The jaundice increased and was evidently due to obstruction. The left lobe of the liver enlarged and reached almost to the umbilicus and all over it was very tender. There was also much pain in the right hypochondrium and round the right lower ribs. The mucus coming from the gall-bladder became bile-stained. The patient complained of feeling very ill and was listless and often drowsy. Albumin appeared in the urine and there was œdema of the legs and abdominal wall. Gradually she passed into a semi-conscious state, petechial spots and vesicles appeared over the body, and she died on Feb. 17th.

The pathologist, Dr. O. C. Gruner, examined the blood on Feb. 8th and reported as follows: "Red cells, 4,800,000 per cubic millimetre; white cells, 10,000 per cubic millimetre. The neutrophile leucocytes predominate. This result is quite in accordance with the blood fluid in cases of malignant disease."

Necropsy.—At the post-mortem examination the liver was somewhat enlarged. On laying open the gall-bladder through the fistulous opening it was found to be the seat of malignant disease. Its walls were infiltrated with growth to the thickness of nearly half an inch and the growth extended to, and involved, the cystic duct, practically occluding it. Neither the hepatic duct nor the common bile-duct was affected but the growth involving the cystic duct had pressed upon, and partially obstructed, the commencement of the common duct. Above this stricture the ducts were much dilated and were the seat of suppurative cholangitis. The surface of the liver showed numerous cystic elevations due to the dilated terminal ducts and on section the dilated bile-ducts were found to be filled with pus. A small secondary nodule of growth was present in the left lobe near its anterior margin. No gall-stones were found. The pancreas was normal. The kidneys were small and slightly granular. As regards the chest, there were some adhesions in both pleural cavities and both lungs were the seat of chronic bronchitis. The thyroid gland was the subject of fibro-cystic enlargement. The other organs were normal. Microscopic examination of the growth showed it to be a columnar carcinoma.

Remarks by Mr. LAWFORD KNAGGS.—It cannot be certainly affirmed that the malignant disease had not commenced when the first operation was performed, but it was quite unrecognisable by the finger or by sight, and the presumption consequently is that it was of later origin. There were two sources of irritation present if the temporary use of a drainage-tube be disregarded: one, a gall-stone, which was removed presumably before the commencement of the growth, and the other the bacillus coli communis. It is probable that this latter source of irritation was never thoroughly eradicated from the gall-bladder or its glandular recesses, for when the fistula closed owing to the blocking of the cystic duct by the growth the mucus which collected soon became mixed with pus. Unfortunately no cultures were made from the gall-bladder contents at the second operation so that this point cannot be placed absolutely beyond doubt. The case, however, is of considerable interest from its bearing upon the etiology of carcinoma of the gall-bladder.

SEAMEN'S HOSPITAL, LAS PALMAS, CANARY ISLANDS.

A CASE OF ENTERECTOMY FOR GANGRENOUS HERNIA.

(Under the care of Dr. J. CLEASBY TAYLOR and Dr. RAFAEL GONZALEZ Y HERNANDEZ.)

THE patient who was a Norwegian, aged 18 years, was a sailor on board a Norwegian steamer and was admitted into the Las Palmas Seamen's Hospital on Oct. 20th, 1903. He had been troubled with a right inguinal hernia for five years, though latterly it had shown no sign. On the morning of admission a swelling appeared in the scrotum, accompanied by pain and vomiting. On examination a right inguinal hernia was diagnosed. Attempts to return the mass having been already made and the parts having become very tender ice was applied and an enema was given, this latter producing two movements of the bowels. As there was no vomiting, distension, or abdominal pain it was decided to await symptoms and the subsidence of the inflammation. During the next four days the bowels were moved four times by means of enemata, the tongue remained clean, the pulse-rate was from 56 to 80, the abdomen was flaccid, and the tumour became less swollen and tender. On Oct. 24th, after Dr. Taylor had consulted with his friend Dr. Gonzalez, a hypodermic needle was introduced and some very foul dark brown fluid was drawn off. As it was thought that there might perhaps be a decomposing hæmatocele the tumour was immediately cut down upon under chloroform, and on opening the sac six inches of bowel were found in a gangrenous condition, the fluid extracted being contained in the lumen of the bowel. The gangrenous portion was removed and the divided ends were joined together by means of ten interrupted catgut sutures, these passing through the serous and muscular coats only. The clamps being taken off peristalsis was observed on both sides of the suture, with evident passage of contents and no leakage; the crural canal was then enlarged and the intestine was returned to the abdomen, the external wound being closed in the usual way. After the operation there was neither abdominal pain nor distension, the wound healed quickly, and the patient was out of bed in three weeks. On the fourth day, after an enema, the bowels acted for the first time and regularly thereafter. The patient's highest daily recorded temperatures were as follows: on Oct. 20th, 97·6° F.; on the 21st, 100°; on the 22nd, 100·4°; on the 23rd, 98·4°; on the 24th (the day of the operation), 98·4°; on the 25th, 101°; on the 26th, 100°; on the 27th, 99°; and on the 28th, 99·2°. After this date it did not rise above 98·4°.

Remarks by Dr. TAYLOR and Dr. GONZALEZ.—There were three points of interest in connexion with this case. 1. Notwithstanding the gangrenous condition of the bowel there was for four days no symptom indicative either of strangulation or of septic absorption. On the contrary, the condition of the man in general and of the part in particular was better. If it had not been for the fluid withdrawn by the hypodermic needle we should probably instead of operating have awaited further symptoms. 2. The operation was done with the instruments we had sterilised for the incision of the swelling, without any buttons or proper clamp, the shank handles of Thornton's T forceps being used as clamps. 3. The rise in temperature on the day after the operation was undoubtedly due to septic absorption from the divided ends of the bowel. Five-grain doses of salol every three or four hours acted well.

GLOUCESTERSHIRE INFIRMARY AND EYE INSTITUTION.—The annual meeting of the governors of this institution was held on March 31st under the presidency of Colonel Curtis Hayward. The medical report stated that 1235 in-patients were admitted during 1903, compared with 1335 in 1902. The out-patients numbered 7743, against 8473 in the previous year. The financial statement showed that the receipts amounted to £7558 and that the expenditure was £7839, leaving an unfavourable balance of £281. It was stated that of the £10,600 required for the nurses' home and other improvements the sum of £7518 has been already received.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

The Mental Condition in Epilepsy in Relation to Prognosis.—Peptic Ulcer of the Jejunum.—Carcinoma of the Rectum.

A MEETING of this society was held on April 12th, Sir R DOUGLAS POWELL, the President, being in the chair.

Dr. W. ALDREN TURNER read a paper on the Mental Condition in Epilepsy in Relation to Prognosis, a full report of which was published in THE LANCET of April 9th, p. 982.[1]—The PRESIDENT asked if Dr. Turner was able to define in any precise way the facies epileptica and also whether he had been able to observe any pathological change characteristic of epilepsy.—Dr. FLETCHER BEACH said that since an epileptic child was uneducated the mental deterioration was more marked than it would be in the adult. He had been able to note great improvement in those epileptic children who had been educated. It was a well-known observation that the mental impairment was often greater in cases of petit mal than in cases of major epilepsy.—Dr. C. HUBERT BOND said that at the recently started County Council Colony for Epileptics at Epsom he had had under observation cases which differed only in degree from those seen by Dr. Turner. He said that it was important to note what other members of a family might be mentally affected and especially in how close a connexion they stood with the patient. He had noted that first-born children were frequently epileptic and this he attributed to the difficult labour of the primipara. He also thought that the youth of the parent was an important factor.—Dr. TURNER replied.

Mr. A. W. MAYO ROBSON communicated a paper on Peptic Ulcer of the Jejunum and gave a list of all the reported cases, 15 in number, his being the first, so far as he could ascertain, recorded in English literature. All the recorded cases had occurred after gastro-enterostomy, nearly all of them being after the anterior operation, and in all perforation had occurred. He gave some statistics bearing on the frequency of peptic ulcers. Out of 123 posterior gastro-enterostomies that he had personally performed there had been no instance of jejunal ulceration. Out of 29 anterior gastro-enterostomies he had had the one case he was now reporting. After some remarks on the pathology he described the symptoms and treatment of the condition. He then related his own case which had occurred three years and four months after an anterior gastro-enterostomy performed for pyloric and duodenal ulcer, the patient having been in the interval well for two years. At the operation he had excised the ulcerated portion of the jejunum and then performed Roux's operation. The patient made a good recovery and was now well.—Mr. F. C. WALLIS asked why a peptic ulcer should be commoner in an anterior gastro-enterostomy than in a posterior?—Mr. D. J. ARMOUR asked whether the stenosis of the pylorus referred to in the paper was due to simple cicatrisation or whether it became closed owing to loss of function.—Mr. H. J. PATERSON asked whether the adhesions which were present were secondary to the perforation of the ulcer.—Mr. MAYO ROBSON said that he thought that peptic ulcer was more liable to follow anterior gastro-enterostomy because it was less efficient in draining the stomach than a posterior gastro-entero-stomy. The adhesions which formed were the result of perigastric inflammation and these often prevented peritonitis when perforation had occurred. He had frequently found adhesions round a perforated gastric ulcer. He thought the closure of the pylorus was due entirely to cicatrisation and not to loss of function.

Dr. H. J. COTTON reported a case of Ulceration of the Rectum. The patient, a man, aged 44 years, who had always had a sallow complexion and never had syphilis or gonorrhœa, first began to pass blood and mucus four years ago. Two years ago he was examined and an ulcerative stricture high up in the rectum was found and was diagnosed by a surgeon as carcinoma and colotomy was advised to relieve pain. The patient declined colotomy and attended his work daily with the help of cocaine and morphine suppositories. A year later Mr. W. Arbuthnot Lane suggested incising the stricture as the ulceration had diminished but shortly afterwards high fever, diarrhœa, and tendency to delirium set in, simulating typhoid fever. No implication of the neighbouring glands could be detected. This grave condition lasted six weeks and there was evident burrowing of pus and fæces in the tissues which finally came to a head in a large ischio-rectal abscess which Mr. Lane incised. On March 19th, 1903, the patient was admitted to Guy's Hospital in a desperate condition and Mr. Lane performed colotomy in the left iliac region, although the microscopical report of a piece of ulcerated rectum was "columnar-celled carcinoma." The operation was performed in four stages: on April 1st an incision was made and the colon was stitched to the skin but not divided. To allay the suffering from the consequent obstruction and distension morphine was given till the fifth day when the bowel was divided and Paul's tube was inserted. On the eighth day the protruding loop of colon was cut through and the lower end was clamped and Paul's tube removed and on the eleventh day the clamp was removed. The patient made a steady recovery and left the hospital in six weeks and was very soon able to resume his work. He had now regained his usual weight of 14 stones, though at the time of the acute illness he weighed about 12 stones. There was still occasional discharge of mucus and blood from the anus but he had lost the intolerable pain and found no discomfort from the artificial anus for which no belt or pad was worn. Dr. Cotton submitted the following questions: 1. What was the man's complaint? 2. Was not the fact that he recovered from the blood poisoning of burrowing pus and fæces sufficiently to allow of colotomy and had now enjoyed ten months' good health, regaining his natural weight of 14 stones, inconsistent with the theory of cancer of three years' standing? 3. Did not true cancer live upon its host and produce emaciation and a cachexia in which such a serious operation would have been fatal? 4. Was the microscope at fault?—or, rather, was the microscopist at fault?—for columnar cells were the natural cells of the epithelium of the intestine. 5. Was it wise to apply the term "cancer" to diseases of low malignancy which might last for years?—The PRESIDENT said that he had seen cases with a long period of quiescence after colotomy.—Mr. MAYO ROBSON said that if inflammation was added to carcinoma of the rectum there was a great accession of symptoms and if this inflammatory condition could be relieved a very marked improvement might take place. He referred to a case of five years' duration. The lesson to be learnt from this case was that a radical operation should be performed early if the growth was limited and if it had advanced too far for this a colotomy should be performed. He referred to several cases which appeared to be undoubted cases of carcinoma and in which after a colotomy had been performed the growth entirely disappeared.—Mr. PATERSON referred to the value of a microscopical examination and said he had seen a patient who, three and a half years after colotomy for carcinoma, was in good health.—Mr. WALLIS said he had examined Dr. Cotton's patient and he had no doubt that he had carcinoma of the rectum. He suggested that tubercle might sometimes simulate a carcinomatous mass.—Mr. ARMOUR referred to a case of a long quiescent period after colotomy.

[1] The premature publication of Dr. Aldren Turner's paper was due to an error which we much regret.

MEDICAL SOCIETY OF LONDON.

Exhibition of Cases.

A MEETING of this society was held on April 11th, Dr F. DE HAVILLAND HALL the President, being in the chair.

The PRESIDENT exhibited a case of Thoracic Aneurysm occurring in a man, aged 45 years, who was formerly in the army. In 1884 he had syphilis. He first noticed a pulsating swelling in the front of the chest two years ago. This was accompanied by slight pain in the region of the swelling and between the shoulder blades which extended down the front of the right arm, but the case was one of aortic aneurysm attended by physical signs rather than subjective symptoms. There were evidences of dilatation of the first part of the aorta associated with aortic incompetence. Tracheal tugging was well marked. The treatment of such cases was, in the President's experience, extremely unsatisfactory.

Mr. J. HUTCHINSON, jun., exhibited a case of Undescended Testis (complicating Hernia) brought down into the scrotum by means of section of all the structures of the cord except the vas deferens and its accompanying vessels.

The patient was a man, aged about 25 years. He had an inguinal hernia on the right side and the corresponding testis had never descended outside the abdomen. On operation by slitting up the inguinal canal the testis was found to be of fair size and consistence but it could not by any traction be brought below the pubes after the fascial coverings had been divided by reason of the inextensibility and shortness of the spermatic vessels. These, the anterior bundle of veins and the artery, were divided between two ligatures, taking care to leave the vas deferens and its artery. During the two months that had elapsed the testis had become somewhat harder. The patient would have beennone the worse off if the testis had been excised and Mr. Hutchinson could not recommend this method of treatment. This operation was not altogether new and it could not be regarded as successful.

Dr. H. TILLEY exhibited a case of Frontal Sinus Empyema treated by Operation. The patient was a woman, aged 50 years, who had suffered from nasal discharge for some years due to nasal polypus and recurrent hoarseness which was due apparently to inter-arytenoid pachydermia (so called). It was a noteworthy fact that the latter had disappeared after the radical cure by operation of the frontal sinus empyema.—The case was discussed by Dr. G. WILLIAM HILL and the PRESIDENT.

Dr. TILLEY also showed a case of Asthma relieved by Intranasal Operation. The patient, a man, aged 22 years, had suffered for three years from attacks of spasmodic asthma for which the usual medicinal remedies had been tried with very little relief. For 18 months he had slept in an upright position, the air being impregnated with the fumes of "asthma powders." Examination revealed well-marked moriform hypertrophy of the mucous membrane covering the inferior turbinal bones. On Sept. 21st, 1903, these were removed and there had been complete relief from the asthma since the operation. Dr. Tilley had undertaken the operation with some misgiving as to the result but the relief had been very marked. In his experience such operations for the relief of asthma were more often successful when there were greater nasal lesions than in cases where the nasal lesions were slight, which was the converse of the view held by some observers.—Mr. R. LAKE remarked that he had met with many cases in which the removal of polypi failed to cure the associated asthmatic attacks.—Dr. H. A. CALEY referred to the case of a highly sensitive girl in which operation relieved the asthmatic attacks but determined the occurrence of epileptiform attacks.—Dr. HILL believed that about 50 per cent. of polypus cases were relieved of their asthma and some were quite cured, as in Dr. Tilley's case.—The PRESIDENT remarked that if the symptoms of asthma had lasted for years there was not much prospect of relief by operations for nasal stenosis, but if recent they were amenable to such treatment.

Mr. LAKE exhibited a case of Ménière's Disease after operation (previously shown before the society in February, 1904) occurring in a woman, aged 21 years. The symptoms had been vertigo, deafness, and tinnitus. Hypodermic injections of pilocarpine and many other remedies had been tried without success. The patient had her semicircular canals on the left side removed on Feb. 15th, 1904, and since the operation she had not had any further symptoms of vertigo. The malleus and incus were also removed at the time of operation, yet the voice could now be heard at a considerably increased distance (five feet as compared with two inches). Mr. Lake was unable to explain this fact. The tinnitus had persisted.—Dr. HILL commented on the extreme importance of this case, especially in view of its obvious success. Fulminating vertigo was sometimes due to reflex causes and the indiscriminate handing over of such cases to the aural surgeon was to be deprecated.—Dr. TILLEY and the PRESIDENT commented on the advantages to be derived by attacking such cases by surgical measures; these patients often terminated their lives by suicide.

Dr. WILFRED HARRIS exhibited a case of Post-diphtheritic Chronic Bulbar Paralysis in a man, aged 25 years. In 1897 he had had scarlet fever, followed by desquamation, and six weeks after recovery he had a very sore throat and could not swallow without great pain for four or five weeks. Six weeks later he noticed difficulty in swallowing with nasal regurgitation. He had never been able to swallow dry food since and had much difficulty in swallowing his saliva. Since the commencement he had never been able to whistle, though he could do so before. Four years ago he lost his voice completely for six weeks. He had been slightly worse during the last six months and had noticed slight diplopia twice in the last six weeks, but on the whole there had been practically no variation in the symptoms since the commencement six years ago.—Dr. SIDNEY P. PHILLIPS ventured to doubt the diphtheritic nature of the throat lesion; it might be scarlatinal or septic.

Dr. CALEY exhibited a case of Abdominal Cyst, probably of pancreatic origin, occurring in a man, aged 58 years, in whom the symptoms of diabetes had existed for about four months. The patient stated that for 15 years he had been "getting stout" but he had had no pain or other abdominal discomfort. At the present time there was marked distension with special bulging anteriorly, rather more on the right side than on the left. Dr. Caley dismissed the possibility of other abdominal cystic disease such as mesenteric cyst or a localised ascites.

OBSTETRICAL SOCIETY OF LONDON.

Puerperal Eclampsia treated by Thyroid Extract.—Fibromyoma of the Uterus with Carcinoma of the Body and Fibroid Tumour of the Ovary.—Adeno-myoma of the Uterus.—Torsion of the Pedicle in Hydrosalpinx and other Morbid Conditions of the Fallopian Tube.

A MEETING of this society was held on April 6th, Dr. EDWARD MALINS, the President, being in the chair.

Lieutenant-Colonel A. J. STURMER, I.M.S., read a short communication on 41 cases of Puerperal Eclampsia treated by Thyroid Extract. Ten grains of thyroid extract were given in each case on admission and five grains every four hours afterwards. Morphine and saline injections were also used in many of the cases. Rupture of the membranes, followed by dilatation of the cervix and the early application of forceps or other means of assisting labour, was the usual practice adopted. Under thyroid treatment the maternal mortality was reduced to 12·2 per cent. It was claimed that the urine after the first two or three doses showed considerable increase and that by the end of 24 hours the increase was great, whereas with saline injections and morphine alone no marked improvement usually set in for 24 hours. It was remarked that most of the cases of eclampsia occurred on dull and cloudy days, when probably the skin did not act as well as usually.—Dr. G. E. HERMAN considered that increase in the urinary excretion was one of the most trustworthy indications of recovery of the patient and that as when thyroid was given the quantity of urine became quickly augmented this preparation was really beneficial.—Dr. R. BOXALL said that he had recently learnt that eclampsia was unduly prevalent in the West Indies as well as in the East. This was attributed by the local medical men to malarial influence.—Dr. H. OLIPHANT NICHOLSON considered the results of treatment of cases of eclampsia and of impending eclampsia by thyroid extract as very encouraging. In severe cases he always used morphine in addition.—The PRESIDENT remarked on the difficulty of determining the value of thyroid extract treatment from a series of cases of eclampsia in which other remedies were at the same time used. He was of opinion that atmospheric conditions often exerted a potent predisposing influence in the production of cases of eclampsia.

Dr. W. W. H. TATE, in exhibiting a specimen of Fibromyoma of the Uterus with Carcinoma of the Body and Fibroid Tumour of the Ovary, emphasised the importance of exploring the uterus in cases of hæmorrhage persisting for years at about the time of the menopause and later, because in these cases malignant disease of the body was a very probable cause of the symptoms.—Dr. A. H. N. LEWERS and Dr. BOXALL referred to similar cases of carcinoma associated with fibro myoma which had come under their observation.—Dr. P. HORROCKS called attention to the fact that bleeding from the uterus after the climacteric in a woman known to have a fibroid tumour did not necessarily indicate malignant disease of the uterus as in this case or malignant degeneration of the fibroid. Some authorities disputed the possibility of the latter but Mr. Alban Doran and he himself had shown specimens illustrating sarcomatous changes in fibroid tumours.

Dr. TATE also showed two specimens of Diffuse Adenomyoma of the Uterus.—After remarks from Dr. STEVENS, Mr. J. BLAND-SUTTON, and Dr. F. E. TAYLOR these specimens were, on the motion of Dr. G. F. BLACKER, referred to the pathology committee.—Dr. BLACKER remarked that they

were the first examples of this kind of tumour to be shown before the society. Further examination would no doubt show that the glandular downgrowths were in reality derived from the uterine mucous membrane.

Dr. R. HAMILTON BELL in a paper on Torsion of the Pedicle in Hydrosalpinx and other Morbid Conditions of the Fallopian Tube, dealt first with the literature of the subject. 12 cases of this rare accident in addition to 41 collected by Cathelin were recorded. A full account was given of a case under Dr. Bell's own observation. The general problem of torsion of the abdominal viscera was discussed. It was pointed out that the particular conditions necessary to the production of this accident were much more frequently present in cases of hydrosalpinx than in other forms of tubal disease. Short notes followed on the two varieties of torsion, acute and chronic; the direction of rotation; and the results of the twist. The influence of age and pregnancy was also discussed. The paper concluded with a consideration of the more clinical aspect of the cases. The close approximation of the symptoms to those of a twisted ovarian pedicle was recognised and the fact was noted that a correct diagnosis previously to operation had never yet been made. But it should be at least suggested when the following conditions were present: a fluctuating abdominal tumour of irregular shape, not rising above the umbilicus, associated with paroxysmal attacks of pain, culminating in a very severe attack with vomiting and constipation, and if the tumour had been observed before increase of size, tenderness, and some loss of mobility. The treatment consisted of removal of the twisted tube by abdominal section and Dr. Bell thought that the other tube should be dealt with conservatively whenever possible.—Mr. BLAND SUTTON regarded the diagnosis of this condition as practically impossible. It was a fact that Fallopian tubes when distended with simple fluid, pus, blood, or even when gravid, did twist their pedicles, but it was very difficult even to attempt to frame a plausible theory to explain it; this could be attributed in great measure to their profound ignorance of the statics and dynamics of the peritoneal cavity.—Dr. F. J. MCCANN referred to a case of tubal gestation with twisted pedicle which he had published.—Mr. ALBAN H. G. DORAN considered that diagnosis must be impossible in many cases and that therefore this condition was often overlooked and commoner than clinical records would lead them to believe. Again, it seemed probable, for mechanical reasons, that it was easier for a tube than for an ovarian tumour to untwist itself after axial rotation. Tubal torsion to any appreciable degree was rarer than torsion of the ovarian pedicle because the dilated tube soon became fixed by adhesions, whilst many ovarian cysts did not become adherent to neighbouring structures till after torsion.—Dr. LEWERS referred to a case of his own of pyosalpinx with torsion of the pedicle.—Mr. J. H. TARGETT referred to two cases of tuberculous pyosalpinx in which a similar accident had occurred. He thought that in tuberculous disease the conditions were specially favourable for torsion to occur and that practically all cases of pyosalpinx with subsequent twisting of the pedicle were tuberculous in character.—Dr. BELL replied.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on April 8th, Dr. J. Groves, the President, being in the chair.—Dr. J. Howard-Jones read a paper on the Control of Measles which was an appeal for some form of concerted action for checking the spread or reducing the mortality of a disease which caused no fewer than 13,000 deaths annually in England and Wales and which had been uninfluenced by sanitary improvement for the past 50 years. In many towns closure of schools was never resorted to, in others only when the attendance had been so seriously reduced that it could not be deemed in any sense a preventive measure, and in some it was confined to the infant departments. So with regard to Sunday schools, the practice was equally various: in one town only—viz., Reading—had the corporation Parliamentary powers of closure. Notification was compulsory in a few towns, voluntary in others, but unknown in most. In a large number it had been tried but abandoned. From Dr. Theodore Thomson's report to the Local Government Board it appeared that from 90 to 95 per cent. of the deaths from measles were of children under five years of age, that the greatest fatality was during the second year, but that the incidence of the disease was heaviest in the third, fourth, and fifth years. It would thus be understood why it was that in a number of schools examined by Dr. J. Kerr, medical officer to the London School Board, 75 per cent. of the children over five years had already had the disease. It was therefore clear that schools being the centres from which every epidemic spread and the great majority of the cases, with practically the whole of the deaths, being of children under five years, the attendance of such infants—in fact, of babies—was directly responsible for the greater number of the 13,000 deaths. Their exclusion might not reduce the total amount of measles since the infectivity of the disease was such that sooner or later nearly everyone contracted it, but it would by delaying the age of exposure and attack probably lengthen the intervals between epidemics and reduce the mortality. Infants might still contract it from elder children in the same house but while the family consisted of young infants only they would not be exposed to infection. The attendance at school of infants under six years was unnecessary and injurious; they were incapable of "schooling," and the confinement and impure air of the school room were hurtful to their health and development. The £1,250,000 spent on the so-called education of 610,989 infants under five years of age in elementary schools would be available for higher education and research work, or, say, £1,000,000 for this and £250,000 for the medical inspection of schools and the prevention of disease, while the rates would be relieved for some years from the cost of much school extension, since 14 per cent. of the existing accommodation would be set free for older children. Their attendance was not required by the Elementary Education Act but would be encouraged by the school authorities so long as it counted towards the Government grant. The alleged advantages were far outweighed by the disadvantages and the fact that deaths from measles were confined to the children of the poor was not due, as commonly held, to neglect and exposure during convalescence, for they occurred mostly in the first week, but to their being exposed to infection at the ages of greatest suspectibility and fatality of the disease.—Dr. M. K. Robinson said that the experience of notification in Dover had been very satisfactory. In the seven years prior to its adoption the deaths had averaged 180 per annum and were rising, while since that time they had averaged 81.—Mr. T. W. H. Garstang said that his experience was confined to rural districts but he had repeatedly found that by closing schools so soon as there was evidence of an outbreak it was suppressed before a month had passed, whereas when he failed to obtain the order the disease would persist for much longer periods.—Dr. R. Dudfield maintained that all measures were alike useless so long as those hotbeds of infection—the baby class rooms—were permitted, though something might be done by visitation by lady inspectors, and so on. The Public Health Act, 1875, did not define dangerous infectious disease and he thought that it was in the power of an authority to constitute measles one; at any rate, a test case was desirable.—Dr. S. Davies gave his experience of experiments in the closure of schools in a large urban district where the mortality from being one of the highest in the metropolitan area was now one of the lowest, and asked why the mortality from whooping-cough had diminished while that from measles did not.—Dr. J. F. J. Sykes considered that the rise in the mortality from measles which occurred in the "eighties" was due entirely to the lowering of the school age.—Dr. A. Newsholme had had cards printed with the names of all ordinary infectious diseases, on which the teachers inscribed the name of the pupil, scoring out those from which the child had suffered, and on the appearance of which in the school he or she need not be excluded. Such exclusion of the susceptible only was far more rational than closure to the immune and susceptible alike.

GLASGOW SOUTHERN MEDICAL SOCIETY.—A meeting of this society was held on March 31st. In the absence of the President the chair was occupied by Dr. J. Coulson Howie.—Dr. T. K. Monro read a paper on Alcohol in Medicine, in the opening part of which he referred to the changes that had occurred in the principles and practice of medicine and in the use of drugs. He instanced potassium bromide as an example and referred to its introduction for the reduction of splenic enlargement, while at the present time it was principally used in the treatment of epilepsy. Quite a revolution, the speaker declared, had occurred in the use of alcohol in medicine. He referred to the old treatment of fevers by powerful stimulation by alcohol and gave as an example of this treatment the practice of R. Bentley Todd

who was in the habit of administering great quantities of alcohol in such cases; in one case of a girl, 18 years of age, suffering from enteric fever and pneumonia he gave as much as 48 fluid ounces in the 24 hours. This practice was now obsolete and reference was made to the part which Sir W. T. Gairdner took in the abolition of it. Speaking of alcohol as a food, Dr. Monro declared that there was no evidence to support such an idea. The fact that alcohol was not recoverable from the excretions, he declared, was no evidence of its taking the part of a nutrient. In the process of digestion alcohol was split up into carbon dioxide and water and so in reality was a heat producer, and by preventing the oxidation of fat it became also a fat producer. From the fact, discovered by experiment, that alcohol diminished the systole of the heart and increased the diastole it was proved not to be a cardiac stimulant. In the failing heart of cardiac valvular disease alcohol was declared to be useless. The transient rise of blood pressure noticed after the exhibition of alcohol arose from the reflex action of tissue irritation. When sufficiently diluted alcohol did not cause any rise of blood pressure.—Following Dr. Monro, Dr. J. W. Findlay made some remarks on the action of alcohol on the pulse-rate, the temperature, and various morbid conditions. On the administration of alcohol there was a very slight and transient increase of the pulse-rate; on the temperature its power as an antipyretic was of no importance. Given in large doses, however, it caused great depression of temperature from vaso-motor relaxation, as was seen in cases of acute alcoholic intoxication. In hot climates the free use of alcohol predisposed to sunstroke. Dr. Findlay referred to its use in cases of fainting, neuralgia, great cold, and dysmenorrhœa; in the last-mentioned condition he considered it a dangerous remedy to advise, as there were other means of relief much safer.—Dr. Howie, Dr. D. Macgilvray, and Dr. John Stewart took part in the discussion which followed, and Dr. Monro and Dr. Findlay were cordially thanked for their contributions.

Reviews and Notices of Books.

Adeno-Myome des Uterus. By THOMAS CULLEN, Assistant Professor in the Johns Hopkins University and Gynecological Assistant in the Johns Hopkins Hospital in Baltimore. With 45 illustrations in the text. Berlin: August Hirschwald. 1903. Pp. 91.

Dr. Cullen's monograph is based upon a number of specimens of adeno-myomatous tumours which he has observed at the Johns Hopkins Hospital at Baltimore. The cases are very fully described and the histological details are illustrated by numerous figures. As the author points out, attention was first drawn to this class of tumours by the work of von Recklinghausen in 1896 and since then a number of cases have been recorded in the literature of the subject. In the majority of instances these tumours consist of a uniform diffuse myomatous thickening of the innermost layers of the uterine musculature into which processes of the hypertrophied mucous membrane of the uterus grow down, thus giving rise to the presence of glandular elements and cystic spaces in the middle of the tumours. They may be divided clinically into three classes—those in which the form of the uterus is not altered and those in which the tumours are either subperitoneal or submucous. One of the characteristic features of the growths is that, unlike the ordinary form of fibroid tumour, they tend at their margin to pass imperceptibly into the rest of the muscular tissue of the uterus without any very clear line of demarcation. The author conclusively shows that in the great majority of the cases the glandular elements are derived from the ingrowth of the mucous membrane of the uterine cavity into the tumour. The view of von Recklinghausen that the glands in these tumours are derived from the remains of the Wolffian bodies is not accepted by Dr. Cullen. He comes to the conclusion that in all cases of adeno-myomata of the uterus in which the glandular elements are similar to those of the uterine mucous membrane and are surrounded by a stroma similar to that surrounding the uterine glands, they are derived from the glandular elements of the uterine mucous membrane or from that of the Müllerian ducts, whether the tumours are interstitial, subserous, submucous, solid, or cystic. In the case of the adeno-myomata arising in the uterine horns, Dr. Cullen attributes the presence of gland elements to outgrowths from the uterine mucous membrane, while in the case of similar tumours arising from the tubal portion of the cornua of the uterus—viz., that containing the interstitial portion of the tube—the glandular elements are probably derived from the mucous membrane of the tubes. Adeno-myomata of the round ligament are considered to arise from aberrant portions of the Müllerian ducts. In support of this view is the fact that during menstruation the spaces in these tumours become filled with blood and the membrane lining them resembles very closely the menstruating mucous membrane of the uterus. Adeno-myomata are essentially benign tumours and two very interesting cases are recorded by the author in which in spite of the fact that the tumours were imperfectly removed no recurrence took place and the patients recovered. No doubt in the majority of cases these tumours are mistaken for fibro-myomata of the uterus, a diagnosis by clinical examination alone being impossible. They are not infrequently associated with fibro-myomatous tumours, while Dr. Cullen has met with cases of an adeno-myoma occurring together with a squamous-celled carcinoma of the cervix, with an adeno-carcinoma of the body of the uterus, and of an adeno-carcinoma of the body of the uterus arising in an adeno-myomatous tumour. In 15 of the cases the appendages were carefully examined but no relationship could be detected between the presence of these tumours in the uterus and any lesions of the tubes or ovaries. Dr. Cullen's work is an interesting contribution to our knowledge of an important and little known group of tumours.

Blood Pressure in Surgery: an Experimental and Clinical Research. By GEORGE W. CRILE, A.M., M.D., Professor of Clinical Surgery, Western Reserve Medical College. London and Philadelphia: J. B. Lippincott and Co. 1903. 8vo, pp. 422. Price 18*s.* net.

To this work the Cartwright Prize of the Alumni Association of the College of Physicians and Surgeons, New York City, was awarded last year. It contains the results of 251 experiments on 243 animals. It was undertaken chiefly with a view of determining the nature of shock in surgical operations and the best means of removing its effects. The experiments were made on dogs which were first rendered insensible by an anæsthetic. The trachea was then opened and a cannula was introduced and tracings of the blood pressure were taken. The animals were reduced to the condition of surgical shock or collapse by bloodletting, by removing the integument, by dividing the cardiac nerves, by stimulating the sciatic nerve electrically, by manipulation of the intestines and crushing the paws or the testes, and by other methods; and then various substances were subcutaneously or intravenously injected, such as alcohol, nitroglycerine and amyl nitrite, digitalis, strychnine, normal saline solution, adrenalin and morphine, and various combinations of these drugs, with a view of testing their influence in modifying the blood pressure and thus of preserving life or of acting injuriously. The effects of increased atmospheric pressure both when exerted on the inspired air and when applied to the surface of the body were investigated and, finally, experiments were made on the changes in the blood pressure induced by various operations such as those on the head, mouth, neck, thorax, abdomen, genito-urinary system, spinal column, and other parts. The observations which are here recorded are of great practical importance and we venture to mention a few of

them, though the book itself should be studied by those whose daily avocations bring them frequently into relation with shock. In the case of alcohol in animals suffering from shock, however induced, the injection of a moderate dose usually produced further depression and in some instances a considerable dose, when the state of shock was intense, was followed by almost immediate death. The injection of nitroglycerine and amyl nitrite also increased shock. The action of digitalis in animals suffering from shock, either in the form of fluid extract, tincture, or as pure digitalin in solution, caused a rise in the blood pressure, but they did not live so long as control animals—i.e., animals reduced to the same condition of shock but not treated with digitalis. In regard to strychnine it was found that in any degree of shock after the administration of a therapeutic dose of strychnine the animals passed into deeper shock. Adrenalin, in regard to which the author gives an excellent historical account, under the most diverse conditions and degrees of shock invariably caused increase of blood pressure and prolonged the action of the heart. In another series of experiments it was found that digitalis and strychnine supplemented each other very well, the strychnine heightening the excitability of the medulla and spinal cord and the digitalis augmenting the blood pressure. The author draws the important conclusion that the treatment of shock by the most commonly employed stimulation—namely, strychnine, brandy, digitalis, and nitroglycerine—is injudicious and improper, since it produces systemic confusion in the animal.

There is an important section dealing with the subject of resuscitation of animals apparently dead. In this section the results of many experiments are summarised and the statement is made which is worth recollecting that animals apparently dead for 15 minutes may be and were brought back to life by the combined effect of artificial respiration, rhythmic pressure upon the heart, and the infusion of adrenalin. When the blood pressure rose to 30 millimetres Hg or more the heart began to beat and the blood pressure was rapidly restored. The various methods of determining the blood pressure in the human subject are given and are illustrated by many woodcuts. The average blood pressure in the human subject seems to be between 110 and 150 millimetres, varying under many different conditions, sometimes being estimated at 200 millimetres and sometimes at less than 100 millimetres. In conclusion, the essential phenomenon of shock is held by Dr. Crile to be a diminution of blood pressure but he shows by very satisfactory arguments that this diminution is not due to the failure of the heart or of the cardiac mechanism but to a loss of peripheral resistance which is again the consequence of exhaustion or breakdown of the vaso motor centres. The best means of combating the condition of shock in whatever way it may be produced is by the intravenous injection of a saline solution containing one part in 50,000, or one part in 100,000 of adrenalin. An additional means is to be found in pneumatic pressure applied to the exterior of the body by means of a rubber dress. Very great credit is due to Dr. Crile and to the gentlemen by whom he was assisted for the originality and precision of the experiments recorded. It is obvious that the results obtained have an important bearing on practice.

Studies in Heterogenesis. By H. CHARLTON BASTIAN, M.A., M.D. Lond., F.R.S., &c. With 315 illustrations from micro-photographs and 19 plates. London: Williams and Norgate. 1903. Pp. xxxvii. 345. Price 31*s.* 6*d.*

IN his studies in heterogenesis Dr. Charlton Bastian sets forth at length the evidence on which he bases his belief in the contention which he has so long upheld that the lower forms of life—bacteria, amœbæ, monads, and infusoria—are interchangeable. In other words, Dr. Bastian holds that aggregates of bacteria do not breed true but in their offspring are transformed into what the present-day world is prone to regard as distinct and non-interchangeable forms of life. A slight step further brings Dr. Bastian to advance evidence of the *de novo* origin of many lowly organisms and, owing to its important medical bearings, to deduce from this evidence conclusions which, if rightly established, must of necessity cause the whole fabric of bacteriology, infection, and hygiene to fall upon, and to annihilate, the multitude of investigators who have helped to build upon the foundations laid by Pasteur and to cause the name of Pasteur himself to be erased from the roll of fame.

To review this elaborate book at length would be but to attempt to fight over again the battle ably fought, and we believe won, by Darwin, Pasteur, and their disciples. For this we have no space, nor is it needful to do so. The story is, or ought to be, a matter of common knowledge. It is easily accessible in many interesting volumes, in which the development of the accurate bacteriological methods of the present day can also be traced. No doubt advocates of the occurrence of spontaneous generation and heterogenesis will regard this attitude as an untenable *a priori* standpoint. To one schooled in the modern perfected and unequivocal methods for the *pure* cultivation of bacteria it is, however, the only light in which the results obtained by methods discarded by bacteriologists themselves can be regarded. The antiquated methods which still find favour in attempts to re-establish the *de novo* origin and interchangeability of lowly forms of life find no place in modern bacteriological technique. In this attitude bacteriologists are but extending to the advocates of spontaneous generation the treatment which they mete out to one another and against which no bacteriologist will be found to protest.

The methods of modern bacteriology have been devised to exclude or to obviate the errors arising from "outside infection" and the notoriously deceptive appearances suggestive of transition forms of cell life. If bacteriologists detect in the results of other members of their calling features which are incompatible with cleanness and accuracy of method those results are discounted in the same way as those obtained by Dr. Bastian are received with scepticism and the erring or would-be authority on bacteria finds that his results fall upon unsympathetic ears if he be fortunate enough to find them escape denouncement as futile and fatuous efforts. We do not doubt that Dr. Bastian has taken all the care that his methods have allowed. We are aware of what passes in fluid media containing lowly organisms and can fully appreciate the phenomena which he has so carefully depicted in some 315 reproductions of micro-photographs but we hold that a serious challenge to the claims made on behalf of modern bacteriology is not the outcome of his patient labours, for the simple reason that the limitations of the methods employed cause him to magnify the importance of what the bacteriologist with better methods regards as avoidable, and therefore unjustifiable, sources of error. The book cannot fail to be perused with interest. It is written with great acumen and will be easily intelligible to all who wish to possess the best possible statement of the case against the claims of modern bacteriology and unicellular biology.

LIBRARY TABLE.

Stretcher Drill, Illustrated. Second edition. Including the new hand-seat, wagon, and railway wagon drills, compiled from the Manual of the Royal Army Medical Corps 1904 Regulations for Army Medical Services, Field Service Manual A.M.S., King's Regulations, &c. By Major J. J. DE ZOUCHE MARSHALL (p.s.), Hon. Assoc. Order of St. John of Jerusalem in England, commanding East Surrey Vol. Inf.

Brigade Bearer Compy., Army Medical Reserve of Officers, late of 1st Cinque Ports R.V.C. and 3rd V.B. East Surrey Regt., Ambulance Instructor of London Metropolitan Police. Published by permission of His Majesty's Stationery Office. 1904. Printed at the office of T. W. Childs, at 10, Broad-street, Teddington. Published by the author at Shortwood, Teddington, Middlesex. Pp. xviii.-110. Price 3s.—This is the second edition of "Stretcher Drill, Illustrated," the first of which we noticed in THE LANCET of July 2nd, 1898, p. 32. The author tells us that he has been encouraged to publish a second edition by the favourable opinions which have been expressed by medical officers of both the Volunteer service and of the Royal Army Medical Corps in regard to the usefulness of his first venture. The nature of the little treatise, which is mainly of a technical kind and is profusely illustrated by engravings and diagrams, is sufficiently set forth in its title. In addition to practical descriptions of stretcher, ambulance wagon, and railway wagon drills the work contains much information on a variety of other subjects likely to prove useful to all having to do with bearer work and the transport and management of sick and wounded. A cardboard "stretcher and patient" issued with the book, it may be added, will be found useful in serving the purpose of learning the drill at home.

Essay on the Irregularities of the Teeth, with Special Reference to a Theory of Causation and the Principles of Prevention and Treatment. By J. SIM WALLACE, D.Sc., M.D. Glasg., L.D.S. R.C.S. Eng. London: The Dental Manufacturing Co., Limited. 1904. Pp. 162. Price 5s. net.—This book is a collection of essays which have appeared in the columns of the dental journals. The author freely criticises the views generally accepted with regard to the etiology of irregularities of the teeth and advances a theory of his own; indeed, the keynote to the book is found in the following quotation from the preface. He says: "My studies had so thoroughly convinced me that acquired characters were not transmitted I felt that some other explanation could be made which would account for the diminution in size of the jaws and for the irregularities of the teeth. The idea struck me that there might be an intimate relation between the size and growth of the tongue and the size and development of the jaws, and that this would best explain the facts without any assumption of the inheritance of acquired characters. The facts with which I was acquainted were so easily harmonised by the hypothesis that in a few hours I had roughly sketched out in my mind the theory that I am about to explain." There is undoubtedly a good deal in this book to stimulate thought on the subject but we think if the author had been acquainted with more facts he would have found that they did not all harmonise with his hypothesis. In a work, too, aiming at a scientific study of the question it is a little strange to find illustrations of the type seen on pages 96 and 97. The author sharply criticises Mr. C. S. Tomes's views on selective breeding and supports his own views by pictures apparently from fashion plates, one being reproduced by permission of the *Lady's Pictorial* and the other by Messrs. Harrods. The author gives them as examples of faces with small oral orifices but ample buccal cavities—on what grounds he does not state but to our mind one figure suggests a case of superior protrusion and the other a contracted upper jaw from which the canines have been removed.

The Public Schools Year book, 1904. London: Swan Sonnenschein and Co., Limited. Pp. 568. Price 2s. 6d.—This useful work, which is now in its fifteenth year of publication, was "founded by three public school men—Eton, Harrow, Winchester"—and we learn from the preface that it was the intention of the editors "to include only the great historical public schools along with the more important Victorian schools which have so ably maintained the traditions of the earlier foundations." Gradually, however, the scope has been widened and now the only limit drawn is that a school must be connected with the Headmasters' Conference. Next year, indeed, it is the wish of the editors to deal with the leading girls' schools. The book contains a great deal of information as to the various schools therein included and two new features of this year's issue are an engineering appendix and a musical appendix which give full details as to instruction in these two branches of science and art.

Memoranda on Infectious Diseases for the Use of School Teachers. By JAMES W. ALLAN, M.B. Glasg. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. 1904. Pp. 23. Price 6d.—This little book was originally written for teachers under the Cathcart school board and in the words of the author is meant to be brief and fragmentary. In no profession other than the medical is the ability to recognise the signs of infectious disease so important as in that of the teacher, for a child at school suffering from some infectious disorder, if not promptly isolated, is almost bound to infect his fellows. Dr. Allan gives very plain and simple directions as to the signs and symptoms which may lead the teacher to suspect that a child under his charge is suffering from infectious disease. At one point, however, perhaps, he is a little too optimistic and that is where he says that a child "may return to school three weeks after appearance of rash," the rash in question being that of measles. It would have been well had this statement been qualified by the proviso that all desquamation should be at an end and that the general health of the child should be satisfactory. In some cases four weeks may be necessary. Apart from this point the directions given are admirable.

JOURNALS AND MAGAZINES.

The Journal of Physiology. Edited by Sir MICHAEL FOSTER, F.R.S., and J. N. LANGLEY, F.R.S. Vol. XXXI., No. 1. London: C. J. Clay and Sons. March 29th, 1904. Price 4s.—The articles contained in this number of the *Journal of Physiology* are as follows: 1. The Time Relations of the Photo-electric Changes produced in the Eyeball of the Frog by means of Coloured Light, by Francis Gotch, F.R.S., with seven figures in the text. The records for the comparison of the time relations were obtained by means of the capillary electrometer. The red light response is characterised by a long latency period equalling three-tenths of a second and a strength of 0·0004 volt. With green and white light the latent period was two-tenths of a second and the maximum response averaged over 0·0005 volt. The response to violet light was $\frac{2.5}{10.0}$ths of a second and was of low intensity, averaging only 0·00024 volt. The response to sudden darkness had a latency of two-tenths of a second and is not easily obtained after violet illumination unless this has been maintained for eight seconds or more. The results appear to be in accordance with the Young-Helmholtz theory of light as modified by Maxwell which assumes three distinct colour reactions—viz., red, green, and violet. 2. On Protagon, Cholin, and Neurin, by W. Cramer. Mr. Cramer believes that protagon is not a mixture of different substances but can be isolated. 3. The Function of the Hyaloid Canal and some other New Points in the Mechanism of the Accommodation of the Eye for Distance, by T. P. Anderson Stuart, with nine figures in the text. 4. Contribution to the Physiology of the Thymus, by D. Noel Paton and Alexander Goodall, with one figure in the text. The authors of this article found that in guinea-pigs removal of the thymus is accompanied by a decrease in the number of all varieties of the leucocyte, which decrease in number

lasted about two months. The removal of this organ diminished the resisting power of the animal to the action of the toxins of staphylococci and streptococci but not to the toxin of diphtheria.

Scottish Medical and Surgical Journal.—The first four original articles in the April number are as follows: Chronic Intestinal Obstruction caused by Annular Stricture of the Large Intestine, by Mr. David Wallace; Referred Pains, by Dr. William Bruce; a case of General Streptothrix Infection, by Dr. Stuart McDonald; and a case of Pancreatic Infantilism, by Dr. Byrom Bramwell. Abstracts of three of them have already appeared in our columns in the reports of the meetings of the Edinburgh Medico-Chirurgical Society. The paper on Streptothrix Infection gives a very full account of the bacteriology and pathogenic relations of the organism; it is illustrated by two finely-executed coloured plates and several photoprints of microscope fields. Among the summaries of recent literature much information of interest at the present time is given in a paper by Dr. Harry Rainy on Blondlot's "N" Rays. It was in a communication made to the Paris Academy of Sciences on March 23rd, 1903, that M. Blondlot of Nancy announced his discovery of these rays which pass through aluminium but differ from Roentgen's x rays in several respects. The articles published on the subject are to be found chiefly in the weekly *Comptes Rendus* of the Academy of Sciences. Some English investigators on repeating the experiments made in France have not succeeded in obtaining confirmatory results. Some physiological relations of these rays have been described and have been referred to in our columns more than once during the present year.

Caledonian Medical Journal.—Several of the Stewart Celtic Prize Essays have from time to time been published in this journal and one of them forms the opening article in the April number. It is on Old Highland Therapy, is by Mr. Henry Whyte of Glasgow, and naturally contains some Gaelic, both in prose and verse. Dr. T. D. Greenlees, medical superintendent of the asylum at Grahamstown in Cape Colony, writes on the Circulatory Apparatus in General Paralysis of the Insane. He considers that in this condition the pulse presents some characteristic features which may be demonstrated by the systematic use of the sphygmograph. In an article on Medico-legal Experiences Colonel Kenneth Macleod, I.M.S., refers to gynæcological troubles arising out of child marriages in India. The annual meeting of the Caledonian Medical Society will be held on July 22nd in Edinburgh.

Liverpool Medico-Chirurgical Journal.—This journal is published half yearly. The present issue is dated January, 1904, contains 220 pages, and is mainly a record of 28 papers read and many specimens exhibited at the meetings of the Liverpool Medical Institution from January to April, 1903. Several of these communications have therefore been mentioned in our reports of these meetings. The great majority of the papers are on surgical subjects and several are accompanied by illustrations. There are four original articles, the titles of which are: Treatment of Asthma, by Mr. Colin Campbell; Treatment of Prostatic Obstruction, by Mr. D. Douglas-Crawford; Chronic Interstitial Nephritis, by Dr. J. H. Abram; and the Vestiges of Syphilis, by Dr. F. H. Barendt.

The Calcutta Practitioner: a Medical Journal. Calcutta: Published by the City Book Society. Annual subscription for India, 5 Rs.; for foreign countries, 8*s.*—We have received the first two numbers (January and February, 1904) of the above-named journal. We are glad to welcome its appearance, for it may meet a want, as it is intended for circulation among the native members of the medical profession in Bengal. As the editor writes in the introduction to the first number, "No apology is necessary to justify the appearance of a new medical journal in a land where such periodicals are only conspicuous by their scarcity." What is primarily sought for in this new publication is to provide a medium of circulation for the records of the valuable experiences of the isolated units of the medical profession of Bengal. The editor writes with reference to tropical medicine that the clinical phenomena connected with such diseases may be studied much more advantageously in India, where cases are so numerous and varied, than in the schools of tropical medicine in Great Britain. All the articles are written by native practitioners and the text contains many examples of the modes of expression and of the usual mistakes which are familiar to those who are accustomed to English as spoken by the "baboo." The January issue contains a paper on Adrenalin Chloride in Plague and other Diseases, by Rai Bahadur Kailaschandra Bose, L.M.S., C.I.E. This article is worth reading; the author says that adrenalin, given in any stage of plague, maintains the heart and pulse admirably well and brings down the temperature; that its effect in pneumonic and intestinal plague is far from encouraging, but that in bubonic plague, uncomplicated with pulmonary and intestinal troubles, it is a sovereign remedy. The second number, issued in February, contains an interesting paper on the Effects of Mental Impressions of the Mother on the Embryo, by Haridhan Dutta, L.M.S., and also Dr. Bully Chunder Sen's address to the Calcutta Medical Club, delivered at its third annual general meeting. The address deals chiefly with the prospects of the native graduates in the Government service and the grievances of assistant surgeons. Among the contents are Clinical Notes and Records, Reviews of Books, and Remarks on Current Medical Events and on Current Medical Literature. The general get-up and the printing of the journal are very creditable.

Analytical Records
FROM
THE LANCET LABORATORY.

(1) KEPLER MALT EXTRACT WITH HÆMOGLOBIN; (2) MANGANESE AND IRON CITRATE (SOLUBLE) WITH QUININE; AND (3) MANGANESE AND IRON CITRATE (SOLUBLE) WITH STRYCHNINE.

(BURROUGHS, WELLCOME, AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

1. THE assimilation of iron in the form of hæmoglobin is now established and the latest contribution upon this subject appeared in a paper by Dr. W. D. Halliburton.[1] The results of all observers show that the administration of hæmoglobin improves considerably the condition of the blood with a resulting gain in health and strength. Hæmoglobin is very favourably exhibited in the Kepler Malt Extract. In this form it is agreeable to take, besides which the malt extract itself is a nutrient and helps the digestion of starchy foods. On the whole this combination may be regarded as a valuable therapeutic addition and its use is specially indicated in anæmia, chlorosis, and general debility. We found the preparation to be highly active in converting starch into sugar. A dilute solution gave the characteristic hæmoglobin spectrum; the moisture amounted to 21·41 per cent. and the ash to 1·49 per cent., the latter containing iron and an abundance of phosphate. 2. The preparation of manganese and iron citrate in scale form containing quinine is an obviously valuable combination, as is also that (3) which contains strychnine together with the scale preparation of manganese and iron citrate. We have confirmed on analysis the amounts of the metals and alkaloids stated. In preparation (2) of quinine the manganese amounts to 7 per

[1] Brit. Med. Jour., April 9th, 1904.

cent., the iron to 14 per cent., and the quinine to 15 per cent. In the strychnine preparation the quantities of manganese and iron respectively are the same with 1 per cent. of strychnine. Both preparations may be had in the form of tabloids.

ALE AND STOUT.

(BARCLAY, PERKINS, AND CO., LIMITED, PARK-STREET, SOUTHWARK, LONDON, S.E.)

On analysis the light bitter ale (No. 1) gave the following results: extractives, 4·79 per cent.; mineral matter, 0·23 per cent.; alcohol, by weight 3·12 per cent., by volume 3·90 per cent., equal to proof spirit 6·84 per cent.; maltose, 2·05 per cent.; fixed acidity calculated as tartaric acid, 0·112 per cent.; and volatile acidity reckoned as acetic acid, 0·09 per cent. This is a well-brewed light ale and a genuine malt liquor bittered with hops. It was in excellent condition. The analysis of a sample of stout marked No. 2 furnished the following results: extractives, 5·10 per cent.; mineral matter, 0·30 per cent.; alcohol, by weight 5·25 per cent., by volume 6·55 per cent., equal to proof spirit 11·49 per cent.; maltose, 2·36 per cent.; fixed acidity reckoned as tartaric acid, 0·20 per cent.; and volatile acidity reckoned as acetic acid, 0·06 per cent. As will be seen from this analysis this is a light form of stout free from acidity and containing only a moderate amount of malt extractives. No. 3 B.S. stout gave the following results on analysis: extractives, 8·40 per cent.; mineral matter, 0·45 per cent.; alcohol, by weight 4·00 per cent., by volume 5·00 per cent., equal to proof spirit 8·77 per cent.; maltose, 3·10 per cent.; fixed acidity reckoned as tartaric acid, 0·22 per cent.; and volatile acidity reckoned as acetic acid, 0·06 per cent. The amount of malt extractives is characteristic of a stout described as nourishing, while the alcoholic strength is relatively low. The stout was in good condition and free from acidity. No. 4 is an export stout which gave the following results on analysis: extractives, 7·85 per cent.; mineral matter, 0·35 per cent.; alcohol, by weight 7·27 per cent., by volume 9·04 per cent., equal to proof spirit 15·85 per cent.; volatile acidity reckoned as acetic acid, 0·11 per cent.; fixed acidity reckoned as tartaric acid, 0·24 per cent.; and maltose, 2·50 per cent. As will be seen, this export stout contains more alcohol than does the previous specimen. It is an excellent example of this description of malt liquor. No. 5 is a specially brewed stout intended for exportation to the Russian and North German markets. The analysis was as follows: extractives, 9·95 per cent.; mineral matter, 0·55 per cent.; alcohol, by weight 9·36 per cent., by volume 11·61 per cent., equal to proof spirit 20·35 per cent.; maltose, 2·78 per cent.; volatile acidity reckoned as acetic acid, 0·15 per cent.; and fixed acidity reckoned as tartaric acid, 0·35 per cent. This is a "vigorous" malt liquor containing a relatively high amount both of extractive matters and alcohol. It was ripe and mellow and in sound condition, showing no excess of acidity. We believe these malt liquors are thoroughly genuine and they are evidently brewed with care, judging from their excellent condition and flavour.

DIOXOGEN.

(THE OAKLAND CHEMICAL COMPANY, NEW YORK. BRITISH AGENCY, THOMAS CHRISTY AND CO., OLD SWAN LANE, LONDON, E.C.)

It is surprising that pure solutions of peroxide of hydrogen have not found greater application in medicine than is the case, since while it is comparatively harmless it possesses very decided cleaning and antiseptic properties. Dioxogen according to our analysis is well suited for medical use in the form of spray for inhalation or local application of the throat or to be taken in definite doses internally since it is free from the common impurities of preparations of hydrogen peroxide. It contains only a trace of chloride. In spite of its proportion of available oxygen the preparation is fairly stable. According to our analysis dioxogen contains just over 3 per cent. of pure peroxide of hydrogen.

CRYSTALLISED DIGITALINE (NATIVELLE).

(WILCOX, JOZEAU, AND CO., 49, HAYMARKET, LONDON, S.W.)

Digitaline in the pure crystalline state is, of course, a perfectly definite principle and in this form the therapeutic efficiency of the alkaloid can be accurately gauged. It is important that drugs possessing such a powerful action as does digitaline should be pure and definite. The digitaline extracted and crystallised by the process discovered by M. Nativelle, a pharmacist of Paris, has been employed in medicine with uniformly satisfactory results which signify that it is therapeutically superior to ordinary digitaline preparations. The crystalline alkaloid may be prescribed in the form of granules each of which contains $\frac{1}{20}$th of a grain.

COD-OLS AND CAST-OLS.

(COD-OLS MANUFACTURING CO., 93, DYERS HALL-ROAD, LEYTONSTONE.)

These preparations consist of croquettes of chocolate and flavouring compounds containing a definite amount of castor oil or cod-liver oil, as the case may be. They are prepared with the view of overcoming the objection to the taste of the respective oils. Some amount of success has certainly been obtained in the case of the castor-oil preparation but we cannot say as much for the cod-ol which, in our opinion, is particularly nasty when an attempt is made to masticate it. After all, nauseous substances occupying any bulk are necessarily more rapidly swallowed in the fluid than in the solid form.

Looking Back.

FROM

THE LANCET, *SATURDAY*, April 15, 1826.

ON THE MEDICINAL PROPERTIES OF SPIDERS.

To the Editor of THE LANCET.

SIR,—Dr. Bright, in his last Lecture on the treatment of intermittents, recommended, on the authority of one of his pupils, the cobwebs of a peculiar kind of black spider, as a very efficient remedy for obstinate agues. Dr. Bright did not detail the particulars of their modus operandi, neither did he mention the manner in which they should be administered, or the dose necessary for a perfect cure, but he assured his pupils that this action was most salutary, and directly attributable to the medicinal properties, and not to their acting upon the mind as a charm. Several patients having been cured by them, who had not previously been apprized of the nature of the remedy. As the spider to which the docile Doctor has alluded is, I believe, of a very rare species, perhaps it might not be improper to suggest to him the employment of the animals themselves, and also their kindred species, which more abundantly inhabit our houses.

"Credat, Judæus Apella
Non Ego."

A MEDICAL PUPIL.

The black spider (*araneus niger*, *List. Hist.* 77, *Schrod.* 5, 337) was formerly officinal, and much celebrated for its febrifuge virtues. Wrapped in leather, and hung about the arm, it was supposed to be capable of averting the fit of a quartan, and when boiled in oil and instilled into the ears, of easing pain in those parts. *Dioscor. Lib.* 2, *cap.* 68.—The country people, with whom the dicta of physicians are handed down by tradition, believe that a small quantity of spider's web, given about an hour before the expected return of an ague, and repeated in half an hour, will prevent its recurrence. The Indians of North America are said to employ spiders and their webs in the same way, and, *a priori*, there is no reason why the former, at least, should not possess medicinal properties as well as the cantharis; whether they do is another question.—ED.

New Inventions.

AN IMPROVED ADJUSTABLE COMMODE.

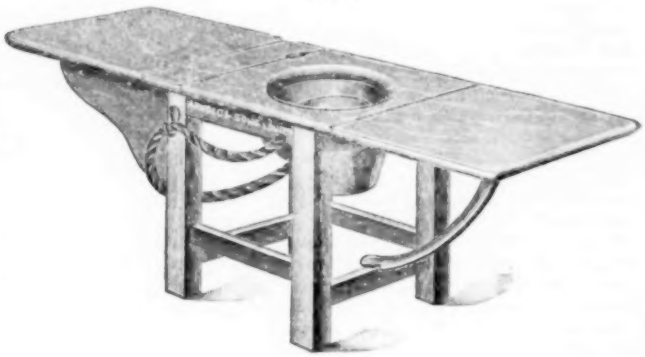
THIS commode admits of a variety of adjustments, in one of which it presents an entirely horizontal surface, as shown in Fig. 2. It will, therefore, sometimes be serviceable in cases where the bed-pan cannot be used. Its height can be adjusted to that of the bedstead. The seat is of a good size and shape, like an ordinary water-closet seat, instead of a small round hole as usually found in commodes, and it is so constructed that it can be slightly raised at the foot end and so prevent a patient from slipping down. The lid which forms the section for the support of the upper portion of the body can be placed horizontally or it can be raised to various heights so that a patient may sit upright or partially so. When raised it is retained in position by strong pieces of cable which form side supports so that it resembles an arm chair, as shown in Fig. 1. If a patient is too helpless to be supported in this way the lid can be folded back and an attendant can stand behind to give the necessary assistance. The section which forms the support for the lower extremities may either be maintained in the horizontal position, as shown in the illustration, or it may be folded down in order to allow the feet to be placed on a hassock. If desired it can be provided with a sliding foot-piece for this purpose. In cases where it is desirable to keep one leg only horizontal the section can be divided longitudinally so that one foot only is lowered. When not in use, the lower section hangs down in front and the upper section is folded over the seat, forming a useful bedside

FIG. 1.

table. Messrs. Arnold and Sons of West Smithfield, London, E.C., are the makers of the commode.

J. LIONEL STRETTON,
Senior Surgeon, Kidderminster Infirmary and Children's Hospital.
Kidderminster.

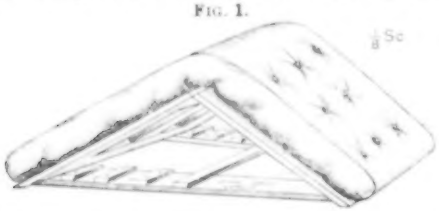
FIG. 2.



A REST FOR FLEXION OF THE THIGHS AFTER ABDOMINAL OPERATIONS.

HAVING noticed how invariably patients require their thighs flexed after abdominal operations and the frequency with which the usual pillows require readjusting, I venture to think that the rest shown in the illustration will be found useful. One of the chief points of the rest is that it provides a firm resisting plane for the thigh at an angle, the heels being allowed to touch the bed (Fig. 1). The rest is made in two sizes to suit long and short thighs. I have used these appliances for some time and they have given great comfort.

FIG. 1.



The wedge-shaped bolster (Fig. 2) is, I think, the ideal for hospital use where so many patients have to lie on their backs for a considerable period.

The bolster enables the shoulders to be slightly elevated, thus leaving the neck straight. As the patient progresses and is able to have a pillow as well it is even more comfortable, being less abrupt than the round bolster or two pillows.

FIG. 2.

Both the leg rest and the bolster have been most carefully prepared by Messrs. Down Bros., Limited, of St. Thomas's street, Borough, S.E., from whom they can be procured.

A. Z. C. CRESSY,
M.R.C.S. Eng., &c.
Wallington, Surrey

THE LANCET.

LONDON: SATURDAY, APRIL 16, 1904.

Medical Defence.

WE drew attention recently to a resolution that had been passed unanimously by the council of the Medical Defence Union in reference to the scheme formulated by a committee of the British Medical Association for medical defence. The motion was: "That this council resolves to do all in its power to maintain the integrity of the Medical Defence Union as at present existing." We have received a copy of a notice which has since been distributed to the members of the Medical Defence Union detailing the reasons which caused the council to come to the above decision. The document is temperately worded and the arguments are cogent and difficult to contest. And that is the point upon which we invite the attention of the medical profession.

The committee appointed by the British Medical Association to consider whether the Association should undertake defence work drew up a draft scheme, one of the paragraphs of which contained an "invitation to the Medical Defence Union, to the London and Counties Medical Protection Society, and to the Medical and Dental Defence Union of Scotland, and other like societies engaged in medical defence, to merge themselves in the British Medical Association to form one professional department for the provision of medical defence." This was, indeed, a bid for that solidarity which we have always advocated. But the Medical Defence Union existing, as it does, as a company limited by guarantee, cannot in any circumstances merge or amalgamate itself into any other company or society, but must exist as a separate entity unless wound up voluntarily or compulsorily under the Companies Acts. The council naturally considers that to wind up and to liquidate a financially sound and successful company which has done for 19 years, and is steadily doing, excellent and valuable work, not only for its members but also for the medical profession generally, would be a waste of the funds of the subscribers. This procedure would involve a large expenditure and a needless sacrifice of the best interests of its members. The union has always performed its work well, has never spared any expense when its members were attacked, and in every way has gained their confidence. No wonder, then, that the council refuses to accede to a wish of the British Medical Association that the union should cease to exist as an entity and should merge itself in the defence department of the Association. In acting thus the council may be accused of acting in a purely selfish manner and of considering only its own interests and not those of the profession in general. This charge, however, cannot be substantiated. The union includes numerous practitioners who are not members of the British Medical Association and who, if the union were wound up, would either be cut off from defence or would have to regain the protection now afforded to them by becoming members of the Association and of its medical defence department. This, to our mind, is a forcible argument against the proposed scheme. According to the last return in Great Britain and Ireland, there are 30,409 registered practitioners, of which number about 15,000 (probably a liberal estimate) are members of the British Medical Association. There is no reason why these numbers should not increase, but it is in the highest degree improbable that the Association will ever include in its ranks every member of the profession, even though the scheme were carried out as it now stands, thus giving to the Association a monopoly of medical defence. Such a monopoly would, however, be only temporary, for another society would soon be formed by those who were not members of the Association. As we have frequently and strongly urged, we should like to see a coalition of the existing bodies engaged in Medical Defence. The experience of their executive committees or councils has now been extended and varied, their joint pecuniary position would be a very strong one, and the medical profession as a body would give more support to a coalition society than to two or more separate bodies.

We do not discuss the details of the scheme proposed by the British Medical Association. The question as to the necessity of altering the memorandum and articles of association in order to adjust the financial relationships between the Association and its new "department," the objects of that "department," and the manner in which it would be worked, are matters which concern the Association only and it would be meddlesome for us to offer any criticism. But the question of the extinction of the Medical Defence Union, the London and Counties Medical Protection Society, and kindred societies is a matter which affects the whole profession. The advantages of medical defence and protection are becoming more and more recognised. Several cases that have been heard recently in public have demonstrated to members of the medical profession that they are peculiarly open to risks which may suddenly involve them in legal proceedings or regrettable scandals. These snares are about the path of all and the only way to guard against them is to join a society for mutual defence. But it does not seem to us convenient that the only way to secure the necessary coöperation should be by joining the British Medical Association. That excellent body has multifarious aims and responsibilities, while the work of medical defence is peculiar. The British Medical Association does not include more than half the medical profession and the benefits of medical defence should be open to all. Lastly—and somewhat to repeat ourselves—the existing bodies have experience and the British Medical Association has none. Why should the medical profession prefer to consult those responsible for a new scheme? On the other hand the medical profession has a right to ask the Medical Defence Union and the London and Counties Medical Protection Society to amalgamate, because their utility would be much enhanced by combination.

Private Practice in Germany.

WE are all accustomed to finding some aspect of the practice of medicine presented in a novel; nor is there of necessity anything objectionable in this, for it can hardly fail to be profitable to medical men to see themselves as others see them, even though, as has been sometimes the case, the vision of the spectator is distorted by ignorance or prejudice. Among smaller romancers the medical man is a favourite character, while nearly every great writer of fiction has taken occasion to sketch some worthy or unworthy member of the profession, often thereby pointing a confused moral or adorning an uninviting tale. DICKENS has given us many medical portraits which, as a whole, in spite of the rampant caricature of some of them, afford valuable indications as to the social standing of the practitioners of the early Victorian era. THACKERAY drew one medical man with splendid cruelty and SCOTT, GEORGE ELIOT, and TROLLOPE all made successes of medical portraits. There is not, however, in English literature any novel which as a serious study of the relations of the practising physician to his fellow citizens can be quite compared with a remarkable story by HEINRICH VON SCHULLERN which has lately had a considerable vogue in Germany. It is entitled simply "Aerzte" (Doctors) and the author has in its production combined with an extensive knowledge of modern medicine the technique of the skilful and cultured novelist. The book deals with the experiences of a young medical man in a small town in Silesia and its pessimistic tone may possibly awake a sympathetic echo in the bosom of any struggling practitioner in this country who can find time to read it. The hero, WALTER HELLMANN, sets out upon his career full of faith in humanity and of enthusiasm for the work which he has undertaken. Little by little his hopes and aspirations are crushed by the meanness and selfishness of those with whom he is brought in contact, until at last he gives up his profession in disgust and despair and attains to some small measure of happiness as a tiller of the soil.

The picture of the middle and lower classes of Germans which is incidentally unveiled is a most unattractive one, but one which it is well should be put before medical practitioners in this country, that they may feel that many of the abuses under which they suffer are shared by their colleagues in Germany. Such a complete absence of delicacy, gratitude, or even common honesty as is displayed by HELLMANN'S patients would seem exaggerated if one had not met with similar instances in England, though perhaps nowhere in this country need the medical life be one of such unmitigated ugliness as the German author depicts. At the opening of the story, the keynote of which is struck in a quotation on the title page, "Die Leiden des aerztlichen Standes sind zahllos, seine Freuden gering" (the troubles of the medical profession are innumerable, its joys are few), HELLMANN, a house physician at the St. Jacob's Hospital at Frankenstein, is seeking to obtain a post as parish medical officer in the neighbouring town of Ebenberg. A member of the senior staff, Dr. TÜBINGER, endeavours to dissuade him and in the course of sundry conversations gives him an inkling of what is in store for him. "Let me advise you to stay here at the hospital for a year or two," says his cynical counsellor. "You are, I know, rich in knowledge and devoted to your duties but these things count for nothing in private practice." He reminds HELLMANN of an experience which the latter has had even while on the hospital staff. "Don't you remember what a scandal was made by the wife of one of our patients whom you with your scientific methods were treating without drugs? If you had only given that man a little water coloured with raspberry juice and had 'poison, with care' underlined on the label you would have been spared all that scene. How annoyed you were with that couple. A practising physician should have an especially thick skin, whereas yours is susceptible to the slightest impression. Remember, too, that here you have me to support you when folly and superstition assail you, but outside you will have to stand alone. Sound health and not too elevated sentiments are what you want. Keen sensibilities are most inappropriate and perilous qualities in the sphere which you propose to occupy." On another occasion he gives HELLMANN further advice in the same strain. "You have before you the wearisome conflict with the stupidity, malice, and falsehood of the public, and especially of the female portion of it. Enemies of a not less dangerous character you may find in your fellow practitioners. In the medical profession, as in any other walk of life, gentlemen are not too numerous. But your greatest opponent will be yourself—that is to say, the most prominent features of your disposition. I repeat that for the medical craftsman no characteristic is more destructive to pleasure in his work than the possession of the finer feelings." HELLMANN, however, is not to be discouraged. "The calling of the physician is," he tells himself, "one of the noblest. He is worthy to stand by the side of the soldier. In the fight against disease the doctor is as much a hero as is the soldier on the battlefield. The dangers, as well as the trials of body and soul, must be forgotten in the joy which the manifestation of one's love for humanity brings with it." Besides, there is a woman in the case and visions of domestic felicity cast a glamour over the future. A certain amount of canvassing has to be done and the task is not a pleasant one. The young man calls at the house of the mayor where he is shown but scant courtesy, for "the whole family, down to the youngest baby playing on the floor, considered that this person need only be treated with indifference." However, the appointment is obtained, and HELLMANN leaves the hospital and begins a life of sordid drudgery which speedily dissipates such remnants of illusion as Dr. TÜBINGER has left him. He has at first some fastidiousness in the matter of receiving fees which, as an incident described in a letter to his betrothed shows, inspires little sympathy on the part of his clients. "The son of the landlord had the courage to allow me to pull out a tooth for him. I was more anxious about the affair than he was and took a fearfully long time, which extra trouble he acknowledged by offering me, in addition to the usual fee, a few coppers as *pourboire*."

Into the details of the story it is not necessary to enter. Nearly every chapter tells of something disagreeable which befalls the hero or the girl whom he has married. Such progress as he makes is counteracted by the malevolence of an influential woman, wife of a local magnate, whose amorous

overtures he repulses. During a temporary absence on account of ill-health he is cheated out of his appointment. His closest friend is estranged through HELLMANN'S failure to satisfy wholly unreasonable demands upon his skill and the death of his own child from diphtheria is regarded by his neighbours as evidence of his incompetence. We are introduced to cranks of all kinds except, curiously enough, the antivaccinationist who does not appear to flourish in all parts of Germany. Against the various evil influences which oppress him HELLMANN makes little headway and it is not surprising to find him describing himself "as a slave of that many-headed monster" the public or regarding the establishment of a species of trade union as the only hope for the future of the medical profession. How many medical men in this country, with provocations hardly less real though not so sensationally accumulated as are the imaginary troubles of Dr. HELLMANN, have come to the same conclusion. We cannot support the view wholly, because the trade union implies in its aims and workings methods which are not consonant with the position of a learned profession; but we welcome the signs, which have recently become more evident, that medical men in this country are awaking to the need of organisation against abuses. A perusal of "Aerzte" cannot fail to confirm the reader in the opinion that this need is a real one.

The Fees of Public Vaccinators.

AT a recent meeting of the Surbiton board of guardians a letter was read, which had been received from the Local Government Board, approving certain surcharges made by the district auditor relating to fees paid to public vaccinators. The fees which have been improperly paid fall under two heads. A sum of more than £400 has been overpaid to public vaccinators for the revaccination of persons at places other than their own homes and a small amount has been paid for the revaccination of children less than ten years of age. The letter of the Local Government Board, to which body the question has been referred upon the refusal of the district auditor to pass the items under discussion in auditing the accounts of the Surbiton board of guardians, is as follows: "It appears that of the sums in question £453 1*s.* represents so much of the fees paid to public vaccinators for the revaccination of persons at places other than their own homes as exceeded the amounts payable under the vaccination contracts. The remaining sum of £2 10*s.* represents fees paid for the revaccination of children under ten years of age notwithstanding the express provision in the Vaccination Order, 1898, that no fee shall be paid for such vaccinations." With regard to the first item the Vaccination Order referred to in the letter of the Local Government Board lays down that vaccinations and revaccinations performed at the patient's home are to be paid for at not less than 5*s.* apiece, while vaccinations performed at the vaccinator's surgery or elsewhere are to be paid for at not less than 2*s.* 6*d.* apiece. That is to say, the rules fix the minimum sum which is to be paid in each instance, and suggest that a smaller amount should be paid when the patient comes to the vaccinator than when the medical man has to go to the patient's home. A form of contract to be used by boards of guardians and public vaccinators is appended to the rules and calls attention to the distinction between the two classes of fees by dealing with them separately. This form is presumably followed in all cases and the amounts to be paid are thus fixed beforehand by a contract which binds both parties. With regard to the revaccination of children under ten years of age, it may reasonably be contended that all successful vaccinations should be recognised as being for the public protection and should be paid for accordingly, but apart from such an argument the rule says clearly that "no payment shall be made in respect of the revaccination of any person who shall be less than ten years old or who shall have been previously revaccinated within a period of ten years." Moreover, the contracts of public vaccinators, if they follow the prescribed form, call attention to the point. The matter is one of considerable importance to medical men who are public vaccinators and who during an outbreak of small-pox may have a large amount of work thrust upon them with little time in which to discriminate and to consider the conditions under which they work. In the case at Surbiton sums ranging from a few shillings to over £100 will now have to be refunded by those who have received them in good faith, believing themselves to be entitled to them and trusting to the knowledge of the officials paying them. The latter should no doubt be sufficiently aware of the rules governing the work of the public vaccinators not to make payments which will be disallowed but this will be no consolation to those who have to endure the worry and irritation inseparable from such proceedings and who will be expected to repay money possibly at an inconvenient time. Others in their position can, however, take warning and protect themselves by carefully observing the regulations that govern the appointments which they hold and their contracts with the boards that employ them.

Annotations.

"Ne quid nimis."

IS THE DELAY IN INTRODUCING MEASURES FOR THE BETTER CONTROL OF OUR FOOD-SUPPLIES JUSTIFIABLE?

To this question we may as well reply at once and emphatically in the negative. It is now more than three years since the Departmental Committee on Preservatives and Colouring Matters issued its report. The report was published early in 1901 and one of the most important recommendations in it was the formation of a court of reference to which all food questions should be referred, and it was further recommended that no preservatives should be allowed in milk and only small specified quantities of boron preservatives in cream, butter, and margarine. Up to the present time no legislation has been made on these recommendations. Why is there so much time wasted in making statutory these recommendations, which were everywhere regarded as a source of protection to the consumer and as fair and reasonable? Again, the Royal Commission on Arsenical Poisoning issued its report on Nov. 6th, 1903, and recommended that the Local Government Board should appoint a special officer who would make inquiries for the Board into the processes

of manufacture of foods in this country and who would also obtain information as far as possible concerning foods imported from abroad. Has this been done or was this recommendation of the Royal Commission on Arsenical Poisoning looked upon as frivolous? On Feb. 5th Mr. Walter Long, in the House of Commons, replying to a question upon the subject, said that he was considering the matter and in his opinion a conference of representatives of the Government departments concerned should be held before a decision was arrived at. Where is this conference of representatives? Has Mr. Long given to it any further consideration? The necessity of a food authority has been admitted and its formation recommended by both the Royal Commission and by the Departmental Committee, and by ourselves again and again, but no further steps have, so far as the public know, been taken in this most important matter. The necessity for such an authority is emphasised when we take into consideration the increasing numbers of new manufactured foods which are constantly being placed on the market day by day. It is open to anyone to make any foodstuff and to place it on the market without any further protection to the public than that provided by the Sale of Food and Drugs Act. As the report of the Royal Commission on Arsenical Poisoning points out, knowledge is required as to the question whether these new food preparations do or do not contain substances deleterious to health or in the process of their manufacture may be liable to contamination by any deleterious substance. "These foods are sold under fancy names without any indication of the ingredients which they contain or of the substances used in their manufacture, and in present circumstances hardly any official control is exercised over the purity of these preparations." When samples are taken under the Sale of Food and Drugs Act, which as a matter of fact is seldom the case, the analyst has no means of knowing whether any particular deleterious matter should be looked for. That the present administration of the Sale of Food and Drugs Act is not all it might be was shown by the outbreak of arsenical poisoning owing to the contamination of beer in the neighbourhood of Manchester. The arsenic in the beer was not discovered by the revenue officials or by the public analysts but by a medical officer of one of the large hospitals. Since this epidemic the Board of Inland Revenue has caused, under an order from the Treasury, numerous samples of brewing ingredients to be taken at breweries and examined in order to see if they are free from deleterious substances. It is of the utmost importance to the community that this process of inspection should not be confined to beer and beer ingredients only. Under the Factory Acts men are protected as far as possible from accidents by well-guarded machinery; boys are not allowed to work until they have passed a medical examination by the factory surgeon. Surely in a similar manner their food should be open to inspection, as recommended by the Royal Commission on Arsenical Poisoning, to see not only that the finished product is free from deleterious substances but that in process of manufacture proper precautions are taken to safeguard the ingredients used in its manufacture from contamination. It is well known that the arsenic in the beer in the Manchester epidemic had its origin in the use of arsenical glucose made with arsenical sulphuric acid, but we have since learnt, especially with regard to the arsenical poisoning cases at Halifax in 1902, that arsenic can also get into beer through the malt. Now at the present time sulphuric acid is used in the preparation of many other food ingredients besides glucose and malt enters largely into the preparation of many patent foods now on the market, so taking only these two food ingredients it shows very clearly the necessity for some form of supervision or inspection of foods beyond that of the Sale of Food and Drugs Act. The United States of America are fully alive to the necessity of having a Pure Food Law and a Bill has just passed through Congress the provisions in which are said to be, first, the fixing of standards of foods and drugs as to their purity, strength, and character and the defining of what shall be considered adulteration or misbranding of foods and drugs; and secondly, the prohibition of inter-state commerce in such misbranded or adulterated articles. It is scandalous that this matter should be so lightly considered by the Government and made the subject of mere pourparlers between the various Government Offices. The question of the health and the well-being of the community is concerned and the reform indicated should be commenced without delay.

THE SUNSHINE OF SPRING.

THE brilliant sunny weather of the present week would seem to have come to assure us that we have at length emerged from the long, dark, cheerless days of winter. The effect upon the well-being and the physical aspect of the individual is quite noticeable. The winter pallor is gradually yielding to a healthier-looking colour, faces even look sunburnt, and the general personal appearance is that of renewed vigour and health. Improved tone and nutrition are moreover disclosed in the temperament as well as in the physical appearance. All this is the beneficial work of a bright spring which brings especial joy after the dark, devitalising influences of an unpropitious winter. About this time of the year the sun in England exerts its maximum actinic strength; the solar rays are more active in the month of May than in any other month. They effect profound changes in plant life and *a priori* they must have an important influence upon the physiological processes of the animal body. Both analytic and synthetic processes are going on in the full flood of chemically active light in which the spring sun's rays are peculiarly rich. It would be difficult to estimate the good which a bright, sunny spring brings in its train, what epidemics and disease it may avert. It is fatal to the *materies morbi* which may have survived through the dark days of winter; it purifies the streams, it vitalises the air, and it revives and healthily stimulates the great circulatory processes of both vegetable and animal life. In short, light is life, yet of the exact nature of the action of light we know very little. Modern discoveries are teaching us that the whole interest of nature lies in the perpetual degradation and change that are going on not only in the animal and vegetable kingdom but in the mineral kingdom also. The very enjoyment and agreeable stimulation which we experience from the spring sunshine are gained at a cost which means the sun's degradation. When that degradation is complete, life, as we now understand it, must cease. For aught we know the sun may be a vast mass of radium which in the process of breaking down gives out heat and light, new elements appearing which possess no radio-activity at all. How immense and almost inexhaustible this energy must be is well illustrated in the apparent permanence as regards thermo- and photo-activity of even a thousandth of a grain of radium.

"TESTING THE EYESIGHT OF A NATION."

THE reception given by the *Times* to the circular under the above heading, which was sent by the *Optician and Photographic Trades Review* to the press generally, has in no small degree fluttered the Volscians of the optical Corioli. The *Times*, in very plain language, condemned the proposed "diploma" of the Spectacle Makers' Company as a document which would be used to mislead the public and pointed out that the relations between errors of refraction and troubles arising from, or connected with, disease were so

intimate that no one not possessing medical knowledge could be trusted to unravel them. It seems, however, to have fallen into the mistake of attributing the invention of the word "optologist" to the "Optical Society," of which the *Review* above quoted is the "official organ" and which has hastened to disclaim the imputed merit. The poor word, indeed, seems to have no friends. It is said by Mr. Laurance to be "of Transatlantic origin" and to be "curious and ungainly" but the fact remains that it has come into regular employment by spectacle-selling quacks. We frequently see an omnibus carrying a large outside notice board covered by the advertisement of a person who describes himself as "Eye Specialist and Optologist, qualified by examination," and whose shop has "Ophthalmic Institution" in large letters over the door. In the columns of the *Times* the advocates of the new "diploma" roar like sucking doves and profess that all they require is to be subjected to fresh "limitations" by the action of the Spectacle Makers' Company. What they really wish is, of course, to be represented to the public as the possessors of knowledge which in reality they do not and cannot possess. Assuming them to be honest men, they are not only ignorant but are in the still more hopeless position of being ignorant of their ignorance. A curious assumption by the editor of the *Review* in his letter to the *Times* is that "there are only 400 oculists." What he means by an "oculist" or how he arrives at the number is not stated, but he is clearly not aware that the conditions of vision and the nature and treatment of errors of refraction form part of the ordinary medical curriculum and that every candidate for a medical qualification is as much liable to be examined about them as about any other portion of the wide circle of professional knowledge. No medical practitioner under 50 years of age has the slightest excuse for want of acquaintance with either the diseases or the functional derangements of the eye or should be in the least liable to confound one with the other.

PARALYSIS AGITANS.

Dr. T. Stuart Hart, neurologist to the Vanderbilt Clinic, has contributed to the *Journal of Nervous and Mental Disease* for March a valuable paper on Paralysis Agitans based on the cases examined and records made in the neurological clinic of Professor Allen Starr of New York since the year 1888. The number of cases examined, amounting to 219, exceeds very much any similar series published by any one writer and as such has a statistical value which may help, adds Dr. Hart, to elucidate some facts in the etiology and pathology of this obscure disease. The majority of the patients were drawn from the humbler walks of life and advanced paralytic cases of the disease were practically excluded, as only patients who could walk were able to attend. Paralysis agitans was found to be nearly twice as frequent among men as among women, the proportion being 139 males to 89 females, or 7 to 4. The disease rarely made its appearance before the thirtieth year. In the largest proportion of cases the age of onset was between 40 and 60 years. Thus there were two cases under 30 years of age, 19 cases between 30 and 40, 54 cases between 40 and 50, 88 cases between 50 and 60, 42 cases between 60 and 70, and nine cases over 70, the ages of the remaining five cases being unrecorded. "Paralysis agitans, therefore, belongs not strictly to old age but rather to the presenile degenerative period." As far as could be determined occupation seemed to have no bearing on the etiology. Direct hereditary transmission could rarely be traced (16 per cent. of cases), though other neuroses were present in the ancestry in a larger proportion (about 25 to 30 per cent.) of cases. Borgherini has, however, reported a family in which of nine children three brothers and four sisters, and three children of these, suffered from paralysis agitans. Among the etiological factors assigned by the patients themselves two stood out prominently—viz., emotion (anxiety, grief, severe fright, or shock) and traumatism. "Traumatism often involved," adds Dr. Hart, "an emotional shock and it was possible that emotion might be the more important factor in many of these cases." Sudden and continued exposure and prolonged fatigue were also among the alleged causes. In 12 of the cases an acute infectious fever (typhoid fever, influenza, pneumonia, malaria) preceded the onset of paralysis agitans. It is clear, says Dr. Hart, that we are far from solving the real etiology of the disease though it is noteworthy that all the factors mentioned have in common a general weakening influence on the nervous system and the vaso-motor apparatus. Of the individual symptoms tremor was the first noticed by most of the patients (203 out of 207 in which a record was made of this). The tremor began usually in one or both hands or less frequently in the arms (163 out of 213 recorded cases), but in a few cases (one-seventh of the 163 cases) the lower limbs (foot and leg) or head were first affected and in five cases the tremors were general. Rigidity was observed in 142 cases; in 138 of these tremor was also present. Tremor had existed for periods of from eight to ten years in several cases before the onset of rigidity. Contractures were noted in 28 cases; tendency to fall forward, backward, or rarely sideways during walking was noted in 68 out of 173 cases specially examined. The voice was monotonous in 59, slow and measured in 31, piping in 12, feeble in 15, and "thick" in ten out of 120 cases. Pain in the hands and arms, legs, head, and back of a dull character was present in 70 out of 157 cases and paræsthesia of the extremities occurred in 120. Hyperidrosis was complained of in 57 instances and restlessness was a marked feature in the course of the disease in 85 cases. The treatment of the cases followed well-known lines and included rest from work, removal of sources of worry and anxiety, abstinence from alcohol and stimulants, a simple nutritious diet, moderate exercise, passive movements, massage, and hydrotherapy, and such drugs as hydrobromate of hyoscine and sulphate of duboisine which diminished tremor and pain. Improvement followed in a few cases, the disease coming to a standstill and remaining so for a number of years, with relief of tremor, pain, and insomnia, but, adds Dr. Hart, no absolute cures could be reported.

THE DISTRIBUTION OF PLAGUE.

THE public health authorities of New South Wales inform us that after an immunity of nearly seven months during which Sydney was free from plague infection a mouse was ascertained to be plague-infected on March 7th. The mouse came from a building known as the Grafton Bond at Darling harbour. The rat-catching staff of the board of health has been instructed to pay particular attention to the wharves and bonds between the gas company's works and Erskine-street, within which locality the Grafton Bond is situated. Since the mouse was captured (about one week before a definite diagnosis was made) 250 other rodents have been caught within the area above mentioned but all were free from plague. During the last outbreak of plague in 1903 there were 161 plague-infected rats and mice caught but only 2 cases of the disease occurred in human beings. It is hoped that the vigorous measures now being taken with regard to rodents will have as good an effect in limiting the outbreak of this year as was the case in 1903. Plague has also appeared in Queensland, as reported in our correspondent's letter at p. 1088. In the Cape Colony for the week ending March 19th only 1 case of plague was discovered in human beings—namely, that of a coloured female at Port Elizabeth. Plague-infected rodents were found there and at East London, but in the Cape Town and

Harbour Board area of 375 rats examined during the week none was affected with plague. As regards the Mauritius, a telegram from the Acting Governor received at the Colonial Office on April 8th states that for the week ending April 7th there were 3 deaths from plague. The latest returns from the Transvaal show the following figures, as contained in a telegram from Lord Milner received at the Colonial Office on April 8th:—Suspected cases reported up to date, 154: coloured persons, 136; and whites, 18. Deaths, 72: coloured persons, 65; and whites, 7.

THE QUESTION OF HEREDITARY TRANSMISSION OF ACQUIRED MORBID CONDITIONS FROM PARENT TO OFFSPRING.

IN a recent *Thèse de Paris* (1904) Dr. G. Delamare of Paris, working at the laboratory of Professor Charrin, has given an account of the results obtained by him in this branch of study. Hereditary transmission from the parent to the embryo, says Dr. Delamare, may take place in one of three ways: first, the germ-cell or the ovum may be damaged or altered as the result of grave constitutional disturbance or disease acquired by the mother at or before the time of conception, a similar condition being possible also as regards the spermatozoon of the male parent; secondly, the impregnated ovum before it has undergone differentiation into it embryonic rudiments (pre-embryonic stage) and while still free in the Fallopian tube or encapsuled in the uterus may be subject to the action of toxic, cytolytic, and other disturbing morbid agencies present in the maternal blood plasma; and, thirdly, the embryo may be affected *viâ* its placental attachment to the mother which takes place at the third week and marks the beginning of embryonic life proper. These modes of hereditary transmission are not identical and should not be indiscriminately confounded under the general term "heredity." By "acquired" characters in the pathological sense are to be included, says Dr. Delamare, those changes of a physico-chemical or morphological nature which are produced *de novo* within the parent organism, not having been inherited by it *ab ovo* but caused by the action of extraneous agencies of sufficient potency. Thus insanity or gigantism may appear in a man or woman whose parents are free from either of these affections and the man or woman thus affected may transmit the morbid condition in question to the offspring in a very marked degree. The same applies to cretinism. Gout of the father will, says Dr. Delamare, predispose to gout in the son whom he procreates and so will tuberculosis of the father predispose to a vulnerability or facile tendency of the son to acquire tuberculosis. Leucocytes are found to be able to transmit to their descendants (daughter leucocytes) the power of immunity acquired against certain diseases (Massart). That superficial and slight mutilations of the parent, such as circumcision and the rupture of the hymen, are not inherited is due to the fact that these do not produce bodily disturbance of nutrition or affect the composition of the blood and therefore cannot affect the germ or sperm cells. No nexus of cause and effect exists, but as the consequence of serious lesions of the nervous system or viscera of the parent experimentally produced Dr. Delamare states that the offspring may show in the corresponding organs conditions of disease or abnormality the nexus of which can be traceable as effect and cause. Thus as regards serious lesions of the central nervous system attended with constitutional disturbance the classical experiments of Brown-Séquard on guinea-pigs have shown that a special form of epileptic attack accompanied by certain trophic lesions, produced by hemisection of the dorsal spinal cord (rarely of the cervical and never of the lumbar spinal cord), is transmitted to the offspring with great frequency. These experiments have been confirmed by Obersteiner, Westphal, Dupuy, and Romanes, and by Dr. Delamare himself. A similar form of epilepsy produced in guinea-pigs by a less serious lesion—viz., section, crushing, or laceration of the great sciatic nerve—is also hereditarily transmissible. Massin excised half the liver in buck and doe rabbits and found that the descendants had small and malformed livers. Dr. Delamare found that removal of a kidney or of one suprarenal body in several guinea-pigs did not affect the corresponding organs of the offspring. Experiments were also made on two bitches, three rabbits, and 17 guinea-pigs to bring about local destruction of parts of the liver (hepatitis and localised cirrhosis) by injections of naphthol, distilled water, and dilute solutions of silver nitrate, all with positive results (partial atrophy, cirrhosis, and maldevelopment of the liver) as regards the offspring of these affected animals. He states that cytotoxins and cytolysins are liberated from the affected organ and circulate freely in the blood, and that such cytotoxins influence the germ cell or developing ovum while still in the embryonic state, causing it to develop and to manifest the characteristic lesions of the liver while still in utero. It was also found that hens which were hypodermically injected with extracts of such cytolysins laid eggs which were abnormal and damaged, inasmuch as when hatched they showed an unusual proportion of malformed embryos, dead embryos, amniotic hæmorrhages, and other abnormalities. Of 27 eggs of hens thus treated 21 showed the abnormal characters in question. The injection of bitches with hepatotoxins and nephrotoxins also produced lesions of the liver and the kidney in the growing embryos in utero. Dr. Delamare thus concludes that there are modes of hereditary transmission to the offspring of diseases and tendencies to disease (diatheses) from parents who have acquired them and that in some cases the pathological nexus of cause and effect can be traced.

THE WINTER'S WEATHER AT SOME ENGLISH RESORTS.

THE following table gives a summary of the temperature, rainfall, and bright sunshine for the whole of the winter—Dec. 1st to March 31st—at several of the chief resorts in these islands. Similar statistics were published in THE LANCET of March 12th for the three months, December to February, at seven of the principal resorts abroad. As would naturally be expected the majority of the latter were

Stations.	Temperature.						Rainfall.		Sunshine.
	Highest maximum.	Lowest minimum.	Mean maximum.	Mean minimum.	Mean of maximum and minimum.	Difference from average.	No. of days with rain.	Total fall.	Total number of hours.
	Deg. F.	Deg. F.	Deg. F.	Deg. F.	Deg. F.	Deg. F.		Ins.	
Harrogate	56	20	41	34	37·5	−0·7	79	11·3	193
Bath... ...	59	21	46	35	40·5	−1·0	72	10·8	198
Tunbridge Wells* ...	57	23	43	33	38·0	−1·5	57	10·3	186
Hastings...	55	23	43	33	38·0	−2·4	80	11·0	222
Torquay ...	59	30	47	39	43·0	−0·2	78	18·7	285
Falmouth	55	30	47	40	43·5	−0·6	83	24·0	254
Scilly Isles	55	33	49	42	45·5	−0·6	88	18·7	280
Jersey ...	56	28	47	39	43·0	−0·6	86	14·9	235

* The observations for Tunbridge Wells are for January to March only.

warmer than the home stations, but there were, nevertheless, two or three notable exceptions. The winter at the

Scilly Isles, which represents fairly well the weather in the Penzance district, had about the same average temperature as Nice and Florence, while as regards the average temperature of the night Scilly was superior to both the Italian and the Rivieran resorts, while in Torquay and Falmouth the nights were just as warm as those at Nice. At most of the English stations, too, the difference between the day and night temperature showed less range than some of those abroad. Nice, for instance, had a mean diurnal range of 13°, but at the Scilly Isles and Falmouth, as well as at Harrogate, the range was no more than 7°, while at Torquay and Jersey it was only 8°. During the three months, December to February, the screened thermometer fell to 32° or below on 11 nights at Biarritz, on six at Florence, on three at Nice, and on one occasion even at Rome. But Scilly was entirely without frost throughout the winter, the screened instrument only once descending to near the freezing point, and at Torquay and Falmouth there were only two or three slight frosts. The aggregate rainfall at the home stations was less than at some of those abroad although it had a month longer in which to fall. The number of days with rain are not strictly comparable, as a "day with rain" at the foreign stations signifies a day when at least four-hundredths of an inch of rain has fallen, while with us it means a day when at least one-hundredth of an inch has fallen. It is a pity that all the stations do not give the percentage of ozone present in the atmosphere; at Torquay, where the borough meteorologist takes careful observations, the percentage of the possible amount for the whole winter was 47. It was least—38—in December and greatest—59—in February.

A CASE OF TUBERCULOUS DEPOSIT IN THE SPINAL CORD IN THE COURSE OF PULMONARY TUBERCULOSIS.

Dr. Ernst Oberndörfer of Berlin records in the *Münchener Medicinische Wochenschrift*, No. 3, 1904, a case of considerable interest from the Moabite Hospital at Berlin under the care of Professor Goldscheider. The patient was a man, 26 years of age, who had for some time suffered from tuberculosis of the lungs. He began to complain of disturbances of the act of defecation and difficulty in emptying the bladder, with wandering pains in the epigastric and lumbar regions. Later a paresis of the left leg developed with some impairment of sensation of the lower half of the body. The condition was regarded as one of compression paraplegia and weight extension was applied; in spite of this the condition of the patient became rapidly worse, complete paraplegia with retention of urine developing. Meanwhile the pulmonary disease advanced rapidly and six weeks after admission to the hospital the patient died. Before death the original diagnosis of compression paraplegia was discarded and the correct one of tuberculosis of the spinal cord was made on the following grounds—the co-existence of the lung condition, the absence of the objective signs of vertebral caries, and the manner of spread of the cord symptoms beginning with unilateral paralysis and local patches of anæsthesia and gradually advancing to complete paralysis and loss of sensation. The necropsy confirmed the diagnosis: the vertebræ and meninges were natural but in the lower dorsal region of the cord a bean-shaped swelling was found projecting slightly above the surface on the posterior aspect. A cross section was made at the level of the eighth thoracic segment, when a yellowish white tumour, sharply marked off from the softened cord tissue around, was exposed. Its internal border was surrounded by a narrow zone of greyish red translucent tissue. The tumour occupied the whole of the left side and extended into the right side of the cord at this level, leaving only a small area of the white matter of the antero-lateral region unaffected. It extended downwards in conical form and ended at the ninth thoracic segment. A piece of the tumour examined microscopically showed a mass of conglomerate tubercle, caseous centrally, and surrounded by fresh nodules in which typical giant cells were found and abundant tubercle bacilli. Apart from the rarity of this condition, of which Herter reported three cases, collecting records of 24 others from the literature of the subject, this case is of interest from the correct diagnosis having been formed during life and from the admirable and instructive way in which it is recorded.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

OUR readers will remember that the Prince of Wales, the President of King Edward's Hospital Fund for London, announced at a meeting of the general council of the Fund held at Marlborough House on March 8th that a large sum of money, estimated to produce £4600 a year, had been promised by a friend if a further sum of double that amount were obtained by the end of the year. The object of the anonymous donor is to enable the council to make its distributions to hospitals without drawing upon its reserves as it had to do last year when a sum of over £18,000 was thus appropriated to complete the grants. Towards this object a donation of £1000 has been received by the Fund from "G. W. C." and a legacy of £10,000 from Mr. F. S. Massy Dawson, the executor of the late Mr. Richard Hawkins Beauchamp. Mr Hugh C. Smith, the chairman of the executive committee, has issued an appeal for further donations towards making up the sum required and he announces that he will be glad to give any further information concerning the Fund. The address of the Fund is 81, Cheapside, London, E.C.

THE EARLY DIAGNOSIS OF PERFORATION IN TYPHOID FEVER.

MORE than a fourth of the deaths from typhoid fever are due to perforation. The value of operation has been abundantly shown in recent years. At the Johns Hopkins Hospital six patients have been saved out of 14 operated on. Dr. H. W. G. Mackenzie has published an eminently practical paper in the *Practitioner* for January in which he points out that as good results may be obtained in general as in hospital practice if the practitioner is on the alert to give the patient the benefit of prompt operation. He very clearly states the points in the early diagnosis of perforation. The danger of perforation commences with the disease and lasts until recovery is complete. Perforation may occur before the patient feels ill enough to take to bed or during convalescence. The greatest risk is during the second, third, and fourth weeks. Abdominal pain is the most important early symptom and may be the only one. It usually comes on suddenly and is severe and persistent. Vomiting, nausea, hiccough, frequent actions of the bowels, a rigor, sweating, mental excitement, or collapse may precede, accompany, or quickly follow the onset of the pain. The nurse should be instructed to report at once to the practitioner the occurrence of pain or any other of these symptoms. When summoned the medical attendant should carefully examine the patient for the following signs of perforation. 1. There may be a change in the temperature—a sudden fall or a sudden rise, or a fall followed by a rise, or a rise followed by a fall; but a steady temperature for a few hours does not negative perforation. 2. There may be a change in the pulse; soon after perforation the pulse usually becomes more frequent and weaker. It is highly significant if the pulse in the few hours following the attack of pain becomes more rapid, running, and feeble; but increased rapidity does not invariably follow within a few hours. 3. There may be a change in the facies. The development of a pinched or drawn look, depression of the angles of the

mouth, sinking in of the eyes, blueness of the lips, and sweating are important. 4. Still more important are the local abdominal signs. There may be tenderness which usually is more marked in the lower half of the abdomen. Rigidity or resistance of the abdominal walls may be present. The abdomen may be retracted or distended but in either case there will probably be rigidity or resistance. On the other hand, softness or flaccidity is reassuring. Obliteration of liver dulness is a valuable sign if present but is not free from ambiguity; it is confirmatory of the diagnosis of perforation of a hollow viscus. Shifting dulness in the flanks may point to the presence of free fluid in the peritoneal cavity. Finally, there may be diminished respiratory movement of the abdominal wall. Dr. Mackenzie advises that the practitioner should select the surgeon beforehand, so as to obtain him equipped in the shortest possible time.

A FESTIVAL dinner in aid of the funds of the Middlesex Hospital will be held on Tuesday, May 3rd next, at 7.30 P.M., in the Whitehall Rooms of the Hôtel Métropole. The Right Hon. the Lord Mayor will take the chair. A preliminary list of gentlemen who have consented to act as stewards has been issued and contains 192 well-known names. Noblemen and gentlemen willing to act as stewards are requested kindly to send their names to the secretary-superintendent of the hospital, Mr. F. Clare Melhado. The chairman of the dinner committee is Lord Sandhurst and the deputy chairman Prince Francis of Teck. The dinner will be free of charge and contributions are earnestly solicited. It is stated that the proceeds of the dinner will be devoted to the purposes of making good the inroads on invested capital which have been necessitated by new buildings and other improvements to meet the demand of modern requirements and for the maintenance of the cancer charity and the special department for research into the nature and cure of cancer, the hospital's branch establishment for convalescents at Clacton-on-Sea, and improved and extended accommodation for the nurses.

A GENERAL meeting of the Metropolitan Street Ambulance Association will be held at 20, Hanover-square, London, W., on Monday, May 2nd, at 5 o'clock. Important motions will be submitted for consideration, amongst them one in favour of sending a representative deputation to the London County Council early in May. All medical men are invited to attend. 1000 London medical men have already joined the association. The fact that membership incurs no liability and that there is no compulsory subscription necessitates the formation of a fund to provide for printing and incidental expenses. Members wishing to contribute small donations of a few shillings are invited to communicate with Dr. Arthur W. James, honorary secretary, at 69, Gloucester-terrace, Hyde Park, W.

THE death of Sir Philip Crampton Smyly took place at an early hour on Friday, April 8th, at his residence, 4, Merrion-square, Dublin. He had suffered from gout for a long period but in the end his death came unexpectedly, for after dinner on Thursday he complained of illness and died at two o'clock on the next morning. He was for many years one of the best known and most eminent of Dublin surgeons and on account of his high social qualities and invariable courtesy was greatly esteemed. He was President of the Royal College of Surgeons in Ireland in 1878, representative of the College on the General Medical Council from 1895 to 1900, President of the Irish Medical Association 1901 to 1902, in 1895 was appointed Surgeon-in-Ordinary to Her Majesty Queen Victoria in Ireland, and in 1901 Honorary Surgeon to His Majesty the King. We shall publish a fuller obituary notice.

THE Ingleby Lectures of the University of Birmingham for 1904 will be delivered on Tuesdays, May 10th and 17th, at 4 P.M., in the medical lecture theatre, by Dr. C. J. Cullingworth, obstetric physician to St. Thomas's Hospital, who has taken for his subject, a Plea for Exploration in Suspected Malignant Disease of the Ovary.

THE FIRST INTERNATIONAL CONGRESS OF SCHOOL HYGIENE.

(FROM OUR SPECIAL CORRESPONDENT.)

THE First International Congress of School Hygiene was held from April 4th to 9th at Nuremberg under the patronage of His Royal Highness Prince Ludwig Ferdinand of Bavaria.

It may be well to state, first, the object of the Congress and, secondly, by what bodies the English and foreign interests were represented. The object of the Congress may shortly be said to be to direct the attention of existing authorities to the importance of, and the practical means of attaining the most perfect results in, the physical and mental wellbeing of children, to direct attention to the hygiene of the teachers themselves, and, lastly, to give an opportunity to those especially interested in the wellbeing of the young to study and to appreciate the means whereby this object can best be attained.

The English interests at the Congress were represented by a special committee formed by members of various organisations interested in education and school hygiene. The formation of this committee was due to the energy of the medical officer to the London School Board, Dr. James Kerr. The English committee includes representatives of the following bodies: the Royal College of Physicians of London, the Royal College of Surgeons of England, the London School Board, the Medical Officers of Schools Association, the Incorporate Society of Medical Officers of Health, the London School of Medicine for Women, the Childhood Society, the Child-Study Association, the National Union of Teachers, and the Sanitary Institute, and was under the presidency of Sir Lauder Brunton.

The first general meeting of the Congress took place in the Apollo Theatre, Nuremberg, on April 5th and was attended by nearly 1500 members. The chair was taken by Professor Dr. GRIESBACH, the President of the Allgemeiner Deutscher Verein für Schulgesundheitspflege, and he requested Prince Ludwig Ferdinand to open the Congress.

Prince LUDWIG FERDINAND said that it was with the greatest pleasure that he had come to open the First International Congress of School Hygiene. It was the ancient and historical town of Nuremberg which opened its doors to the Congress. This was the town in which such masters as Albrecht Dürer and Hans Sachs had lived and by their art and genius had added to its fame. He welcomed the delegates from distant States and countries and said that they had come together for the purpose of discussing the means for developing the coming generation into healthy and educated men and women. He wished the Congress success in its work and declared the First International Congress of School Hygiene open.

Professor Dr. GRIESBACH welcomed the delegates from the various countries and from the numerous societies. He said that no less than 20 European and extra-European States were represented at the Congress and that only Turkey and Italy were unrepresented. It had unfortunately been impossible to form an Italian committee. It was in such work as the Congress had before it that the medical man and the teacher must work hand in hand. The delegates from the various countries then spoke, Dr. A. EICHHOLZ, His Majesty's inspector of schools for the blind, deaf, and defective, replying on behalf of Great Britain.

At the closure of the formal business of the meeting the first general meeting of the Congress was held and Professor COHN (Breslau) read a paper entitled "What has the Ophthalmic Surgeon done for School Hygiene and what remains

to be done?" More than 40 years ago he had inspected the schools in Breslau and it had been his first duty to see that the schools were better lighted. In those days there was neither school hygiene nor school medical officer. The well-known work of Helmholtz, Graefe, Arlt, and Donders had, indeed, appeared but had not been applied to the hygiene of schools. From 1864 to 1866 the speaker had examined the eyes of 10,000 school children and was in search of the cause of the increasing short sight and of a means of preventing this defect. This work was the starting point of work on school and eye hygiene the literature of which had now become so vast that it was no longer possible to examine it all. He found, in the first place, that the number of short-sighted children steadily increased with the development of the school from the lowest village school to the gymnasium; in the second place, that the number of cases of myopia increased from class to class; and in the third place, that the degree of short sight also increased from class to class. These facts had now been proved by examination of thousands of children in various lands and might be stated as "laws." Myopia might be regarded as a widespread disease produced by school life. Further experience in the last ten years had shown that the acuity of vision in young children examined in the country was twice or three times as great as that of a child examined in the school room—similar to the great acuity of vision which was present in the Bedouin Arab. Unfortunately the acuity of vision diminished during the years of school life very rapidly. The true cause of short sight—viz., the change in the shape of the eye from a ball to that of an egg—was not even yet fully known, although there were various hypotheses. One thing was certain—that much close work, especially in association with hereditary disposition and bad lighting, produced myopia and that school hygiene must more especially fight against such near work. 20 years ago Professor Stilling had attributed the short sight not to work but to an alteration in the shape of the orbit. This view could not be upheld on anatomical grounds and it was greatly to be regretted, since if such were the case it would render all the work in connexion with school useless in the prevention of myopia. The position of the writing table and the position in which the pen was held were important and it had been shown that less short sight resulted when these points were carefully considered. The character of the print of books was an important matter and the speaker regretted that even at the present time in Bavaria books were allowed which were badly printed. Professor Cohn next dealt with the lighting of the rooms. In 1883 he had first used the photometer of Weber and had been able accurately to estimate the light of the schoolroom. A definite unit of the minimum light allowed was established and he had found in a gymnasium in Breslau only a tenth of the minimum light was present in some places. In the same school he found that the greater number of the children could not see the sky. He then showed various methods for estimating the light in a room and at a given point in the room. He had for many years advocated the appointment of ophthalmologists for the examination of school children. 20 years ago in Hungary a medical officer was appointed to each school, but in 234 towns in Germany there were but 676 medical officers. Although much had been done yet the number of short-sighted students had not diminished. He had in 1867, in 1881, and again in 1902 found 60 per cent. of short-sighted students in Breslau. Further attention must be paid to the lighting of the school rooms and to the position in which the child held the head whilst at work. He next dealt with the question of the influence of heredity on the production of short sight and was of the opinion that two short-sighted people should not marry. It was of importance that the regulations imposed in school should also be maintained in the home. The speaker ended his address by the words "Keine Schule ohne Augenarzt" (no school without an ophthalmologist).

Dr. BENDA (Berlin) spoke on the subject of over-pressure in the more advanced classes. He recommended the abolition of the so called Abiturienten-Examen (the final examination which entitles young men to matriculate as students at the universities). No lessons should be given in the afternoons, so that the children might have ample opportunity for bodily exercises and games. Home lessons ought to be limited as much as possible. Special classes for defective or backward children ought to be arranged in the gymnasia, as was already the case in the municipal schools. The more advanced pupils ought to be at liberty to select the classes they wished to attend with a view to their future occupation or position in life. In this way the change from the restraints of school training to the wider circle of university studies would become less abrupt than under the present system.

Dr. SCHMIDT (Bonn) recommended that bath rooms should be provided in schools and that douche baths should be obtainable. Swimming ought to be made compulsory for children above ten years of age.

Dr. GUTZMANN (Berlin) read a report on Stuttering and Stammering Children. He had observed that stuttering was comparatively frequent during the first years of school life and during the period of puberty. By a collective investigation made on 3000 pupils it was ascertained that of each 100 stutterers 6 per cent. were aged from six to seven years, 10 per cent. from seven to eight years, and 15 per cent. from 11 to 12 years. He was of opinion that over-pressure, especially in neuropathic children, contributed to the development of stuttering. On the other hand, he believed that stammering diminished as a result of school training, so that of each 100 stammerers 29 were found to be aged from seven to eight years and only 6 per cent. were from 13 to 14 years.

Dr. GREVO (Munich) discussed the influence of diseases of the teeth on the mental development of children. He said that a great many children in the municipal schools suffered from caries of the teeth. These children were as a rule badly nourished because they were unable to digest satisfactorily and their mental capacity was defective in consequence of this. Regular inspections of the teeth of the children should be provided for in the regulations made by school authorities.

Professor SCHUSNY (Budapest) read a paper on Sexual Questions in Relation to School Life. He recommended that children previously to the age of puberty should be informed on sexual matters by their parents and that teachers of natural science should on suitable occasions allude to these questions. In the Hungarian schools, where lessons on hygiene were given, these requirements were already met. He said that for the last ten years he had been in the habit of delivering addresses to youths who were leaving school, advising them on sexual hygiene, on the danger of venereal diseases, and on the advantages of chastity.

An address was delivered by Professor AXEL VAN JOHANNESSEN (Christiania) on the Position of School Hygiene in Norway. He dealt in the first place with the developments of the school, and stated that since 1889 the schools in the country had greatly improved. He said that not only on the boys but also on the girls gymnastics were obligatory. There was a medical officer in every school and warm baths were provided in most of the schools in Christiania. In the towns, also, many of the poorer children were fed and this cost the State about 160,000 kronen a year. The elder children had games of which the most important was "ski-ing." The upper classes were taught physiology and the teachers were taught school hygiene.

Dr. LE GENDRE of Paris delivered an address entitled "Sur l'hygiène et les maladies personnelles des maitres au point de vue de leurs rapports avec les élèves."

The second general meeting was held on April 7th. The first paper by Dr. PHIL. SECKENGER (Mannheim) dealt with the arrangement of schools dependent on the mental capacity of the children. He said that the capacity of children for education depended on physiological, psychological, pathological, and social circumstances and that it was impossible to order the education of all children on one set plan but that the children must be regarded as individuals of different capacity. He divided the school children into three great groups: those with good capacity, those with less than the normal capacity, and those with but little capacity (weak minded), and on educational, ethical, and social grounds provision should be made for these three classes. He then described such a system which was in operation at Mannheim.

At the last general meeting of the Congress Dr. JAMES KERR read a paper entitled "What is Most Required in School Ventilation." He said there was required for all schools some efficient method of ventilation. In small rooms this might be a modified natural system, by fires or ventilating stoves. Other systems depending on roof ventilators and climatic conditions were fallacious and whilst acting during some seasons of the year failed in summer, and caused draughts in winter. Open windows, doors, and fireplaces, or extraction chimneys could, by a rigorous system of window drills and the constant supervision of a skilled teacher,

be utilised for most of the school year to maintain a comparatively pure air, but even these methods would fail when most wanted, as in summer. For large schools direct mechanical movement of the air was best by large fans running at low speeds. In order to avoid "short-circuiting" by opening of doors all ducts should be as large as could be afforded and the outlets of low resistance; inlets to rooms should be high on the walls, outlets low; 2000 cubic feet per head per hour should be supplied. Accessory heating preferably by low pressure steam or water was advisable. The air should be well moistened. Cloakrooms and stairways must also be ventilated. At present the chief objection to the mechanical ventilation was the sense of loss of tone from want of sufficient skin stimulation by the smoothly flowing warmed air. Probably the system of the future would be one of large supplies of very moderately heated air moved by combined propulsion and extraction by fans, with accessory heating of rooms and free permission to open doors and windows.

The Exhibition.

The exhibition was conveniently held in the same building in which the sectional meetings of the Congress were held, the upper and lower floors being devoted to this purpose. A considerable portion of the exhibition was devoted to the architectural drawing of schools. Most of the plans show an elevation of three floors; on the one side there is a corridor, out of which the various class rooms open, and the same arrangement is repeated on each floor. In the basement provision is made for a bath which may be a swimming bath or more usually a shower bath. A gymnasium is always provided and is in most plans arranged as a building separate from the main block. The variety in the arrangements of the buildings is considerable but all plans provide for the gymnasium and for a bath in some form. A large portion of the exhibition was occupied by school desks in various forms; the general arrangements seemed to be to make the desk and seat to accommodate two children and various devices had been adopted to allow the children to stand up in their places and yet to bring the desk sufficiently near them to prevent them stooping over their work. This arrangement differs from that adopted in the English schools in that the desk is made continuous while the seats are separated for each child. Such an arrangement allows the teacher to pass behind the children and to give to each child room to stand up at the side of his place, whereas in the arrangement shown in the exhibition the teacher is at the side of the scholar and cannot pass behind him. Various mechanical arrangements were shown for adjusting the desk and seats to the varying size of the children, but of these, all more or less complicated, no mention need be made. Generally speaking, it may be said that the desks appear heavy and in most instances to have an excess of ledges for the accumulation of dust. One form of drawing stool may be especially mentioned as it is both ingenious in design and most comfortable to work at. It is shaped as a somewhat flattened horseshoe on four legs. At one end a pillar is fixed which carries a drawing board which can be adjusted at any angle and at any height. From the same pillar an arm projects which carries a stand on which the object to be drawn is placed. The student, male or female, sits on the other end of the horseshoe with the legs in the concavity, or if the student be a male he can sit on the stool in a straddle manner. The only objection that can be raised to such a stool is the fact that it occupies a considerable amount of floor space as compared with a chair, but in comparison to an easel it occupies but a small space.

The above may be said to be the main features of the exhibition. Mention, however, may be made of a simple form of hygrometer for school use. The advantage of knowing the amount of moisture in the atmosphere of the schoolroom is obvious and means can be taken to correct the defect. Some of the diagrams for instruction appear to be worthy of note and one showing the joints cut from a bullock would seem to be of considerable use in the education of girls in housekeeping. Some of the models illustrating the anatomy of the human frame would appear unnecessarily complicated for such simple facts as are required in the education of children. The typewriting machine as used by the blind is of interest. It in some way resembles the Brail system, but by the various combinations of six keys any letter can be made and the word is stamped out and can be read either by the blind person or by sight. The disadvantage of the process is its extreme slowness, for the formation of nearly every letter requires the keys to be depressed three times. Various models for the artificial lighting of rooms were shown. That which seemed the most in favour was the method by which the light was thrown on to the ceiling and only an indirect and diffuse light was thrown on to the book or drawing. Samples of clay modeling, of drawing, of painting, and needlework were shown but called for no special notice. As a whole, it may be said that the exhibition showed but little that was new.

The Primary Schools.

A visit to one of the primary schools gives possibly a better idea of the arrangement of these buildings than a study of many drawings. The school visited was a building of recent date; it was a three-storey building arranged in the shape of an E. The upper half of the E was for girls while the lower half was for boys. The middle stroke of the E was a gymnasium and was a single-storey building. This could be used either by the boys or the girls. Behind the E was a playground. One long corridor ran along the inner side of the E and out of this corridor opened the various rooms. The corridor was divided by a door on the lower two floors so as to separate the boys and girls. The class rooms were made to accommodate about 60 children and the desks were arranged in three rows, the seats being in pairs. For cleaning the floor, which was covered with linoleum, the desks and seats tilted up in a lateral direction so that it was possible to clean completely the floor surface. Arrangements were made for the children's hats, coats, and umbrellas in the class rooms. The class rooms were arranged for Roman Catholic and Protestant instruction and also for "simultan" or mixed instruction. On the girls' side one room was fitted as a kitchen, four small stoves being provided and four tables.

Leading out of the corridor on the ground floor was the gymnasium which was well fitted and arranged and could be used either by the girls or boys. In the basement was the bath room and each child has a bath once a week. The shower bath is the form used and some eight to ten children can take their bath at the same time. Warm and cold water are provided and the regulation of the temperature is in the hands of the attendant. Each child is provided with a cap for the head, a pair of bathing drawers, and a towel. In the basement can also be seen the arrangements for ventilation of the building. The fresh air enters through a coarse filter, passes up shafts into each class room, and the air is warmed by passing over hot-water pipes in the rooms. Arrangements are made by having a small hole in the wall of each room so that the attendant can tell the temperature of the room by observation of a thermometer placed against the wall, without going into the room and disturbing the class. On the third floor is a large hall which occupies a position between the girls' and boys' class rooms and is therefore available for both or either. Although the structure and arrangements of the building differed from those commonly seen in English schools yet the arrangements had much to be commended. A school differing somewhat in detail but similar in the main was also seen. This school had, however, four floors and the large hall was situated over the gymnasium, at the corner of the square, of which the school formed two sides.

THE MOSELY COMMISSION.

THE reports of the various members comprising the Mosely Educational Commission to the United States of America have just been issued and form a volume which will, we think, prove of great value to those interested in education. The book, however, demands close study and the contents are not arranged in the most convenient manner for reference. Thus there is no index and the joint report which apparently summarises the conclusions of the Commissioners is barely one and a half pages in length. There is, in addition, a series of summaries of each report but if the reader wishes to find the opinions of the Commissioners upon any single point his search is by no means made easy. These omissions will, however, we have no doubt be rectified in a future edition when we hope to see a really good subject index added. The idea of the Commission was started in Mr. Mosely's mind by the excellent work which he noticed to be done by American

engineers in South Africa some 15 years ago. To one of these, Louis Seymour, Mr. Mosely reminds us that we owe a debt of gratitude for the admirable way in which he and his volunteer company kept open communications in Natal during the Boer War. Seymour lost his life while leading some men to cover for the defence of a bridge at Zand River. Some years before the war Mr. Mosely visited the United States to see for himself "what sort of country it was that was responsible for sending so many level-headed men to the Cape." On his return he organised two commissions, the one an industrial commission and the other an educational commission. The "terms of reference" of the latter were as follows:—

1. The development of individuality in the primary school.
2. The social and intellectual effects of the wide distribution of secondary education.
3. The effect of specific instruction given (*a*) in business methods; (*b*) in applied science.
4. The present state of opinion as to the value of professional and technical instruction of university rank designed with special reference to the tasks of business life.

Mr. Mosely pays a warm tribute to the people of the United States for the assistance which they gave to the Commission and the hospitality which was so freely proffered.

The joint report expresses the deep impression made upon the Commissioners by the evidence which they have gathered in the United States of the absolute belief in the value of education both to the community at large and to agriculture, commerce, manufactures, and the service of the State. An overwhelming desire to learn appears to characterise the scholars and teachers seem to be possessed of but one wish—that of helping their pupils in every possible way. There is a close connexion between theory and practice, the practical bent of the men of science and letters and the breadth of their outlook being very remarkable. Both the public and private donors give liberally on behalf of education, specially as regards buildings and equipment. But the remuneration of teachers is by no means always on a satisfactory basis and the members of the Commission "have also been led to view somewhat with alarm the growing preponderance of women teachers." The absence of any religious difficulty serves to facilitate the work of the schools. We notice, however, that an instruction to the Commissioners was that religious controversy in connexion with education should be absolutely ignored, so that these reports will not help us on this side of the Atlantic seeing that we are at present passing through an acute stage of the religious difficulty as regards education.

We shall not attempt to deal with the separate reports other than with those of Professor J. Rose Bradford who deals with advanced medical education and of Dr. W. H. Gaskell who deals with the teaching of anatomy and physiology. Professor Rose Bradford subdivides his report into: (1) the Relation of Hospitals to Medical Schools; (2) Clinical Laboratories; (3) the Teaching of Medicine; and (4) Pathology. The medical schools visited were, in the United States, those of New York, Philadelphia, Baltimore, Chicago, Ann Arbor, Boston, and Ithaca, and in Canada Montreal, Toronto, and Quebec. The schools in question were those in connexion with the universities in the above-mentioned cities. The hospitals in most of these cities were only indirectly associated with the medical departments of the universities and their clinical facilities were not exclusively employed for the instruction of the students of a single university or school. In some cities, however, as Baltimore and Montreal, one hospital is entirely devoted to the needs of a single medical school—namely, the Johns Hopkins Hospital at the former and the Royal Victoria Hospital at the latter. In a great many hospitals both in the United States and in Canada the members of the visiting staff are only on duty for a period of three or six months and at the end of this period the wards are transferred to another physician or surgeon. The system of student clerks and dressers scarcely exists in the United States except at the Johns Hopkins Hospital, though it is in full operation in Canada. In most American hospitals, however, the ward work is done by internes who correspond to house physicians and house surgeons. Professor Rose Bradford summarises the first portion of his report as follows:—

> These two points—on the one hand the limited period of service of the visiting and teaching staff and on the other the absence of the clerk and dresser system—were those which most impressed an English teacher as indicating the main points of difference in the relations of the hospitals to the teaching medical schools.
>
> Many of the American teachers are alive to the advantages of the clerk and dresser system, but they point out that under their system the students get the practical acquaintance with disease subsequently during their period of office as "internes," at a time, moreover, when they are more fully capable of making use of the opportunities afforded them. In the English system the student becomes a clerk or dresser at a period in his career when he knows little or nothing of medicine or surgery and thus they argue that the great opportunities afforded him are to a considerable extent wasted. With their system the "interne" has already graduated and has acquired a knowledge of medicine and surgery which should enable him to make full use of his opportunities. The great and obvious disadvantage of the American system is clearly the fact that not all students can possibly become "internes" and thus a number of men must start in practice without the advantages that the daily life in the ward in contact with disease imparts. I was informed on numerous occasions that about half the students in the leading medical schools become "internes" subsequently to graduation either in the hospitals attached to their own schools or in some other city or provincial hospitals, so that at least 50 per cent. of the students not only graduate but pass out into practice without this invaluable experience. This is a very striking, if not the most striking, difference between the system of medical education in vogue in the United States and that followed in this country and also in Canada.

As regards clinical laboratories these in most of the institutions visited were a conspicuous feature. In all the medical schools there is a tendency to bring clinical medicine more closely into relation with recent scientific developments than is the case in this country, blood counts and other investigations being made not merely from a diagnostic point of view for any particular case but in a more or less routine fashion. Such a practice must tend to put medicine on a more scientific basis. As regards the teaching of medicine the work is far more systematised than in this country and the individual student is more supervised throughout the course of his studies. Didactic lectures are almost entirely given up and in most subjects their place has been taken by a great development of laboratory work. In medicine, however, their place has been taken by what are called "recitations." A "recitation" is apparently what we should in this country call catechising—that is to say, a subject is given for treatment and the teacher questions his class upon it and is also asked questions by his class. Professor Rose Bradford seems much impressed by the value of this method. The absence of ward work for students is more or less made up for by small classes under the charge of an instructor who teaches physical signs and the taking of histories. Physical diagnosis is often studied by the student in his second year and the out-patient departments are largely made use of for teaching clinical medicine.

With regard to pathology, the teaching of this subject and the buildings and requirements for teaching it seem to be far ahead of the average establishments in this country. Pathology includes morbid histology, bacteriolcgy, gross morbid anatomy, and, in some cases, clinical pathology. The subject is as a rule begun to be studied in the student's second year. One special point about the instruction is the practice of giving unknown cultures or unknown sections to the students for examination and for diagnosis. A careful record of every student's work is kept by the instructors and demonstrators and Professor Rose Bradford considers that this point and the practice of exercising students with unknown specimens are worthy of imitation in this country.

Dr. Gaskell in his report upon the teaching of anatomy and physiology first draws attention to the fact that there are no outside examiners either in the United States or in Canada. In all cases the question whether a student passes or not is decided by his teachers and not only by a separate examination but also by the nature of the work done by him throughout the term. There is therefore every inducement to him to attend regularly to his practical and lecture work. Physiology includes histology, often combined with embryology, physiological chemistry, and physiology proper. Dr. Gaskell refers to the method of teaching mentioned by Professor Rose Bradford but adds another—namely, "seminars." These, we gather, are something like a "recitation" but the classes are very small and may, perhaps, be compared with the work done amongst us by students reading with a coach. Another method which obtains specially at Harvard, and which Dr. Gaskell considers of great value, is the system whereby a student is allotted a subject upon which he has to write a thesis which has to be read and discussed by the students, fellows, and teachers and defended by himself. He is expected to show a knowledge of the contemporary and other literature dealing with the subject of the thesis. The anatomical and physiological laboratories are far ahead, in Dr. Gaskell's opinion, of most of our own and the system of laboratory units as existing at Toronto and Johns Hopkins University impressed him very much. By this system only some 25

students are taught in one room, each room has its own demonstrator, and each student has his own place during the course. Dr. Gaskell's summarised conclusions are as follows:—

As the result of my investigation into the teaching of anatomy and physiology in America I would like to make the following suggestions:—

1. In our medical and scientific schools separate laboratories with a separate staff of teachers ought to be provided for anatomy, histology, physiology, physiological chemistry, experimental psychology, and perhaps neurology; such laboratories should be arranged on the laboratory unit plan and fitted up throughout with electric light, electric power, and telephones.

2. In cases where there is not sufficient accommodation for the whole class at once the class should be divided into sections and the teaching so arranged that every student has his place to himself during the whole of that course.

3. I would not advocate the extreme concentration method of learning a subject but would rather spread such a subject as physiology (in the English sense) over two years. In the first year I would give a general course in which the subject should be treated as a whole in an elementary way, taking, therefore, together the histological, chemical, and physiological aspects of the subject, so as to give the student a good general view of the subject and leaving the more detailed study to separate courses in the second year in the separate laboratories of histology, physiological chemistry, and physiology.

4. I am inclined to think that histology should not be connected with embryology and put into the department of anatomy but the laboratories of histology and physiological chemistry should be under the control of the professor of physiology, the head of each department being an assistant professor.

5. I am not convinced that didactic lectures are in large measure a mistake and that recitations should largely take their place. I think, however, that the system of seminars should be encouraged as much as possible.

6. A six or seven years' conjoint course for the academic and medical degree should be encouraged as much as possible and in all universities the preliminary medical scientific subjects should be included among the subjects for the degree in arts or sciences.

7. There is much to be said in favour of taking into account the work done by the student during the term in his examination. There are, however, so many difficulties in the way owing to our system of examination that it does not seem advisable to lay much stress on this point.

THE ROYAL NAVAL HOSPITAL, HASLAR.

THE session for the surgeons under special instruction at Haslar was brought to a close on April 7th, when the prizes were given away by Inspector-General Sir John D. Macdonald, K.C.B., F.R.S. Among those present were Inspector-General Sir Henry Norbury, K.C.B., Director-General of the Medical Department of the Royal Navy, and Dr. W. H. Allchin, a member of the Royal Naval Examining and Consultative Boards.

COMBINED RESULT OF THE ENTRANCE EXAMINATION IN LONDON AND THE EXAMINATION AT HASLAR AFTER THE COURSE OF INSTRUCTION.

	Marks.		Marks.
W. P. Yetts	4678	J. C. Bringan	3278
T. D. Liddle	4151	W. G. M. Anderson ...	3225
N. S. Meiklejohn	4023	G. L. Buckeridge	3161
R. H. St. B. E. Hughes	3824	A. D. C. Cummins ...	3115
F. M. V. Smith	3681	T. W. Jeffrey	3073
C. J. Boucher	3641	P. D. Ramsay	3068
A. H. S. Richardson ...	3516	E. P. G. Causton	3046
H. Woods	3494	G. D. Walsh	2939
G. H. S. Milln...	3479	J. E. Johnston	2925
D. H. Vickery	3456	F. Cock	2830
E. B. Kenny	3450	A. R. Davidson	2803
A. R. Schofield	3355	B. R. Bickford...	2779
J. Shipsey...	3320	C. M. Woods	2659
F. J. Gowans	3306	L. C. E. Murphy	2516
E. R. Townsend	3301		

The prizes were awarded to the following officers: Surgeon W. P. Yetts, late of St. Bartholomew's Hospital, London, the gold medal; Surgeon T. D. Liddle, late of Queen's College, Belfast, the microscope; and Surgeon N. S. Meiklejohn, late of St. George's Hospital, London, the silver medal and books.

Sir HENRY NORBURY congratulated the surgeons on the very creditable report which he had received from Inspector-General H. M. Ellis, R.N., in charge of the establishment. Their conduct, he said, had been exemplary, the manner in which they had discharged their duties was all that could be desired, and their relations with the staff of the hospital were generally satisfactory. After wishing them a very prosperous career in the service he could not, he said, give them better advice than to try to emulate the example of Sir John Macdonald who, while yet a surgeon in the Royal Navy, holding the same rank which they held that day, was for his brilliant scientific achievements elected a Fellow of the Royal Society.

Inspector General Sir JOHN MACDONALD, after distributing the prizes, said that special teaching was found to be necessary to keep the Naval Medical Service in touch with the progress of science and with the most efficient treatment of medical and surgical diseases, both at home and abroad. Formerly the medical schools at home dealt very superficially with so-called tropical diseases, so that medical officers serving abroad were often brought into contact with epidemic cases quite out of the ordinary range of their experience or knowledge. It had always been pleasing to him to reflect that he was the first one chosen to take up the subject of naval hygiene and to supervise the general instruction of the naval surgeons formerly at Netley but since transferred to Haslar. It was only to be expected that the naval authorities would institute a system of instruction of their own for the benefit of their medical officers, and a commencement was made very naturally with the aid of officers who had gone through the Netley course and were thus fitted to carry on the good work at Haslar.

Dr. ALLCHIN, at the request of the Director-General, then addressed the surgeons, remarking that under the conditions in which they would carry out their work they would enjoy a freedom from many of those cares and anxieties attendant on the making and maintaining of a practice in civil life. In addition to board and lodging and a pension they would have plenty of free time at their disposal, some of which might reasonably be expected to be devoted to keeping themselves abreast, as far as possible, of the progress of professional knowledge. At most of the ports at which they would be stationed there were perfectly equipped hospitals where they would be welcomed and in many ways they would be able to continue the study of clinical medicine and surgery, of pathology and the like, in a manner that civil private practice did not generally afford. Nor need they be restricted to purely professional subjects. The study of the many aspects of natural history, of ethnography, of the flora and fauna of certain regions, numerous geological problems that await solution, the language and dialects of certain races and the various questions connected with their social and political life were all subjects worthy of study. In this way they would contribute to raising the standard of the naval branch of the profession.

Inspector-General ELLIS then proposed a cordial vote of thanks to Inspector-General Sir John Macdonald for giving away the prizes and the proceedings terminated.

ASYLUM REPORTS.

London County Asylum, The Manor, Epsom (Report for the year ending March 31st, 1903).—The average number of patients resident during the year was 685, comprising 18 males and 667 females. The admissions during the year amounted to 195—viz., one male and 194 females. Of these 189 were first admissions. Dr. W. Ireland Donaldson, the medical superintendent, states in his report that the character of the cases admitted was very unsatisfactory. Thus, excluding 39 patients transferred from other asylums, 118, or 75·6 per cent., were quite hopeless as regards prospect of recovery from the beginning. "The causes of insanity in the patients admitted show little variation from year to year. As usual hereditary predisposition holds the foremost place." 31 cases are stated to have had previous attacks of insanity and alcoholic intemperance existed in 30 cases. The number of patients discharged as recovered during the year amounted to 41—viz., no males and 41 females, or 6 per cent. of the average number resident. The deaths during the year amounted to 68, or 9·9 per cent. as calculated on the same basis. Of the deaths three were due to general paralysis of the insane, four each to pneumonia and senile decay, seven each to cardiac and renal disease, 12 to pulmonary and other forms of tuberculosis, and the rest to other causes. During the month of January a severe outbreak of influenza occurred and 104 persons (both patients and staff) were affected. "The disease was of a comparatively mild type and soon passed off." A few cases of colitis appeared from time to time, the patients attacked being usually old and broken-down dements. As an extra precaution against fire at night two men are constantly on duty. One is a trained fireman who is on duty inside the asylum patrolling the corridors from 8 P.M. to 6 A.M. The other man is

employed on patrol duty immediately outside the buildings. Fire drills for members of the staff take place daily in the wards, every nurse being drilled in the practical use of the outside and inside hydrants. The Commissioners in Lunacy state in their report that the day rooms and dormitories were in good condition, that the beds and bedding were very clean, that the patients were in a satisfactory condition of dress and personal neatness, and that the medical records and case books were well kept and illustrated by excellent photographs. The committee of management states in its report that additions to the building to accommodate 60 male patients are being made at an estimated cost of £10,500. The amount expended on repairs, additions, alterations, and improvements amounted to £5265 during the year.

City of London Asylum, Dartford (Annual Report for 1903).—The average number of patients resident during the year was 561, comprising 254 males and 307 females. The admissions during the year amounted to 193—viz., 107 males and 86 females. Of these 184 were first admissions. Dr. Ernest W. White, the medical superintendent, states in his report that regarding the mental condition of the patients admitted 13 were suffering from general paralysis and 45 from acute and subacute melancholia. "We are still receiving many chronic patients who have been treated previously in other asylums or in single care and who come to us as fresh cases..... As vacancies occur they are filled; we do not confine ourselves to cases of recent origin or to those in which the prospect of recovery is good." The causation of insanity in the admissions included hereditary predisposition, alcoholic intemperance, mental anxiety and worry, old age, and bodily diseases. The number of cases discharged as recovered during the year amounted to 59—viz., 31 males and 28 females, or 10·5 per cent. of the average number resident. The deaths during the year amounted to 48, or 8·5 per cent. as calculated on the same basis. Of the deaths two were due to epilepsy, three to renal disease, four to senile decay, five each to colitis and cardiac disease, six to pulmonary and other forms of tuberculosis, 11 to general paralysis of the insane, and the rest to other causes. The sewage system of the asylum has been thoroughly tested and defects have been remedied, iron pipes being substituted for earthenware in the vicinity of the well. "I may add," says Dr. White, "we have been almost free from dysentery since the change of water-supply." Apart from the occurrence of a few cases of dysentery the general health of the patients was good during the year. The farm account showed a profit on the year's working of £152 5*s*. The Commissioners in Lunacy state in their report that the patients were quiet and orderly in their behaviour, that their dress and personal tidiness were satisfactory, that the condition of the wards, dormitories, and asylum generally was very favourable, and that the medical case-books were well kept. "As respects means of escape in case of fire we think there should be an additional exit from the single room end of F 4 ward and from both hospital dormitories, and we are glad to learn that the matter has already received the attention of the committee." The committee of management states in its report that a sanitary annexe has been added to the workshop block, that a greenhouse has been erected for plants required for the wards and gardens, that minor alterations have been made in the laundry dayroom, and that the fire extinction appliances throughout the asylum have been thoroughly overhauled.

SEWERAGE OF AXMINSTER.—The Local Government Board is urging the Axminster (Devon) rural district council to carry out the work of the sewering of the town at an early date. The district council, however, is taking no steps in the matter and the chairman at a recent meeting stated that the question had been under discussion for the past 30 years. At the present time open sewers in some cases run close to houses and public highways.

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.—Dr. J. F. J. Sykes, medical officer of health of the metropolitan borough of St. Pancras, has been elected president of the Incorporated Society of Medical Officers of Health and will come into office on Oct. 1st. The society has decided to make an investigation into the incidence and causation of "return" cases of scarlet fever and diphtheria and as a first step a committee has been appointed to draw up a schedule of inquiries which medical officers of health and superintendents of isolation hospitals will be requested to adopt.

THE METROPOLITAN ASYLUMS BOARD AND ITS MEDICAL STAFF.

AGAIN we have to comment unfavourably upon the attitude adopted by the Metropolitan Asylums Board towards its medical staff, and in view of the several occasions on which we have considered it our duty to deal with this subject we think it as well at once to disclaim any personal animus in the matter. We know that for our medical readers such a disclaimer is unnecessary but the policy upon which we have commented has not been initiated by medical men, while the situation that has been created is one in which the public is deeply interested. The public duties of the Metropolitan Asylums Board are far-reaching, onerous, and delicate and if that Board, by the tacit sanction of the Local Government Board, succeeds in alienating medical sympathy the sufferers will be the people of London and not the medical profession. The recent arbitrary dismissal of certain of the assistant medical officers of the Metropolitan Asylums Board has, as our readers know, led to the conviction of the Board as an unjust master. The Board has paid compensation to the medical men who were treated in a manner the legality of which the Board shrank from attempting to defend. It is presumably with the view of being able to continue oppressive tactics, but without risk of legal reprisal, that the form which we print below has been prepared for the signature of assistant medical officers accepting service under the Board. The form, we understand, is already in force although it is unlikely that as yet any, or at all events many, medical men have signed it.

METROPOLITAN ASYLUMS BOARD.

CONTRACT OF SERVICE.

Name ... ...
Appointment ... ...
... ... 1904.

I hereby acknowledge and agree:—

1. That the salary agreed to be paid to me is £ : : per annum. [rising, if the committee or subcommittee so order, £ : : per annum to a maximum of £ : : per annum].
2. That the other emoluments of my office are:—
3. That I will faithfully discharge the duties of the office to which I am appointed as laid down in the staff regulations and such other duties as my superior officers may from time to time require of me, and will observe and be bound by the said staff regulations and all other rules and regulations from time to time laid down by authority. I undertake not to perform outside work unless with the special sanction of the committee or subcommittee.
4. That in any case of disobedience, misbehaviour, neglect of duty, or violation of the promises given in paragraph 3 I shall be liable to suspension by the medical superintendent and to dismissal by the committee (or subcommittee) or be liable to dismissal by the committee (or subcommittee) without previous suspension; and that in the event of such dismissal or suspension followed by dismissal I shall receive my salary up to the day on which I may be so dismissed or suspended and no more.
5. That the first month's service shall be on trial and that should the committee (or subcommittee) think proper after the month to dispense with my services from any cause other than those above-mentioned I shall be entitled to one * 's notice or a sum equal to one * 's wages but not to any allowance or compensation for board, lodging, washing, or any provision or privilege.
6. That if at any time I should be desirous of relinquishing my situation I will give one * 's notice or forfeit or pay to the steward the amount of one * 's wages.
7. That my attention has been called to the Poor-Law Officers' Superannuation Acts, 1896-97 and the provisions thereof explained to me.
8. That I am liable at any time to be transferred to any other institution of the Board to serve in a similar capacity to that for which I am now appointed.

Signed ... ...
Date ... ...

Witness ... ...
Occupation ... ...

* Week or month.

The document is a perfectly clear one, needing but little explanation though calling loudly for comment. It has to be signed in the presence of the steward, which seems an odd arrangement, tending to make it appear that an assistant medical officer is particularly in a subordinate position to the steward, while the third clause of the contract places him under the jurisdiction of "superior officers," these being, we suppose, the four principal officers of the Board—viz., the medical superintendent, the chaplain, the matron, and the steward. The fourth clause provides for the legal dismissal

of assistant medical officers in the summary manner which has already cost the Board loss of prestige and loss of money. The position of the Board is secured by the fifth clause, which makes it clear that no assistant medical officer is intended to obtain a longer tenure of his office than one month. We invite medical men who think of taking service under the Metropolitan Asylums Board to consider the situation, and we suggest that no one should sign such a document. It is not in the nature of things to be expected that all the assistant medical officers of the Metropolitan Asylums Board are likely to remain, or are likely to desire to remain, for any long period the servants of the Board. The position of assistant medical officer to the Metropolitan Asylums Board is not one that a medical man would consider as a career, while we are perfectly aware that inconveniences arise from giving lengthy tenure to subordinate appointments. But there is a difference between appointing a medical man to a post for such a long time that it becomes unfair to ask for his resignation, and hiring him in the way that the charwoman or the cook is hired, with freedom to get rid of him at a week's or a month's notice. We do not believe that the Metropolitan Asylums Board, under such a contract, will obtain the services of young medical men anxious to learn and to carry out the various duties appertaining to the administration of a hospital for infectious disease. The assistant medical officer, who has to be obtained in a hurry and has to do his work while a panic is on, knowing that however well he does it he will be dismissed summarily, has no proper opportunity either of learning the scientific treatment of disease or of discharging his functions towards the public. He will not be an efficient officer, and he will not have a fair opportunity of becoming one. There is, so far as we can see, no inducement for seeking the posts in the conditions now imposed.

The object of obtaining the signatures of the assistant medical staff of the Board to the obnoxious contract published above is very clear. The Board desires to get rid of medical men in slack times, the justification of the measure being, of course, economy. No economy will result and it is no use for imitation reformers to shout loudly to the contrary. If we mistake not, on the same plea of economy reductions have been made in the nursing staff of the Board, whereby the position has been brought about that within two or three months of dismissing nurses the Board is advertising for new nurses. Supposing that these vacancies have to be filled temporarily by institutional nurses at wages higher than those given by the Board to its regular staff, where will be the economy? At the present time we believe there may be no particular pressure on the accommodation of the fever hospitals of the Metropolitan Asylums Board, but do the managers of the Board believe that the laws of periodicity are going to be set aside to oblige their spendthrift attempts towards reform? What will happen if the Board finds itself short of medical men and short of nurses with anything in the nature of an epidemic to combat? It will be unable to obtain efficient assistance save by high payment. This situation was met in past days by the maintenance of a staff adequate for keeping open all the permanent wards. That arrangement is now obsolete, while the cutting down of *personnel* is continued with greater rigour. To bring the hospitals into a plight in which they cannot cope with an outbreak of disease is not economy. It is no more economy than it is to omit to take out an insurance policy against fire or death. A ruinous risk is incurred for the sake of saving a premium.

The whole position is a very serious one and demands the attention of the public whose safety depends upon the proper administration and maintenance of the hospitals of the Board. And what we would urge upon the public is that they must not be deceived by any statements that the innovations upon which it has been our duty recently to reflect constitute economy. We do not say this because the so-called economical changes are being made at the expense of the medical profession but because they are being made against public policy. The superintendents are to be put upon fixed and inadequate allowances of coals and lighting. What is saved to the public purse when the expenses of the various meters and their annual repairs are considered? Vicarious dispensing is to be done by the assistant medical officers and the medical employés of the Board are to be liable to immediate dismissal and so on, but the net result will not be economy. The medical profession at first will feel irritated and then will resolve not to place themselves at the disposal of the Board. The Board will have to raise its pecuniary terms and will spend considerably more pounds in so doing than it has saved shillings by ill-judged methods. It is to be hoped that the Local Government Board will take an early opportunity of investigating the whole matter.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Woking Urban District.—Dr. R. W. C. Pierce embodies in his current annual report an interesting account of an outbreak of septic sore-throat which occurred in this district in October and November of 1903 and which was attributed to the consumption of milk derived from a certain farm. There were in all 98 houses invaded by cases of this septic sore-throat and of this total no less than 76 obtained their milk from one or other of two milk dealers who, in turn, derived their supply from a common, and the suspected, source. The remaining 22 houses took their milk from nine other different dealers and Dr. Pierce apparently thinks that the illness in these 22 houses may be explained by the following facts: (*a*) milkmen borrow milk from one another on their rounds; (*b*) householders occasionally buy extra milk from passers-by; (*c*) the conveyance of infection from one house to another; (*d*) the possibility of other milk from a different source being similarly impure; and (*e*) the general prevalence of sore-throat in the autumn. Possibly this endeavour to explain the origin of these outstanding 22 cases is the weakest part of an otherwise strong chain of evidence. On inspecting the cows at the suspected farm the course taken was to examine the milk yielded by each quarter of the udders of the 20 cows and the results are certainly instructive. From one cow dirty pinkish milk was drawn from one teat and normal milk from the other three teats; from another what appears to have been pus was drawn from two teats, while the third cow yielded somewhat similar results. In the case of the fourth cow three teats yielded this pus-like material and the remaining teat coagulated milk. Bacteriologically the milk yielded streptococci and staphylococci "similar, if not identical with those which had been found in swabs from the throats of persons affected." An interesting fact brought out by the investigation was that the external examination of the udders afforded no indication of the conditions which must obviously have been present in the interior. This outbreak led to an examination of all the milk-supplies in the district and the result, as was to be expected by anyone conversant with the filthy conditions obtaining in the cowsheds of England, was to show an excessive amount of dirt "indicating a great want of cleanliness in the production or handling of milk," a fact which is equally demonstrable by an examination of the sediment to be found in the milk jugs of our breakfast tables. The veterinary surgeon who subsequently examined the cows which yielded the pus came to the conclusion that the condition of the udders was due to the fact that the cows had not been "properly stripped and that organisms gained entrance from outside through the milk ducts in the process of milking."

Cardiff Port Sanitary District.—Dr. Edward Walford's report for the last quarter of 1903 contains a record of the bacteriological examination of the water-supply of certain vessels arriving in the port of Cardiff and the results are somewhat instructive. In each case the source of the water is recorded and the results of the bacteriological examinations which were made by Dr. H. A. Schölberg are stated as number of organisms per cubic centimetre both at 37° and 20° C. The variations in the numbers are remarkable. For instance, the water of a steamer which arrived at Cardiff on Nov. 28th and which took in water at Karachi, Suez, and Algiers contained ten organisms per cubic centimetre at 37° C. and 950 at 20° C. This water is classed as "good." At the opposite extreme we have the water of a steamer which arrived on Oct. 23rd and which had watered at Karachi and Algiers, but which contained no less than 12,800 organisms per cubic centimetre at 37° C. and 4160 at 20° C. This water is regarded as "impure." Of course there are many additional facts which it would be instructive to know—i.e., the precise method of storage in each case, the position of the tanks as regards exposure to heat

or dust, and the dates at which they were last cleaned out. But these points notwithstanding, the figures are interesting. The manner in which we in England are dependent upon the foreigner not only for meat but also as regards the quality of such meat is illustrated by the Cardiff figures contained in the report under review. During the quarter ended Dec. 31st of last year there arrived at that port 3450 forequarters and 3450 hindquarters of beef and 30,544 carcasses of mutton. For the wholesomeness of all this food we are largely dependent upon the foreigner, for it can hardly be contended that the examination of the frozen carcass is nearly so satisfactory as the examination of the animal before and after death when all the viscera are available. Against this large arrival of dead meat 411 live cattle and 294 live sheep were received.

Plympton St. Mary Rural District.—Mr. S. Noy Scott is not an enthusiast in the matter of sanatoriums for consumption and he thinks that a given sum of money invested in erecting well-built and properly situated houses would do more towards the permanent reduction of the death-rate from pulmonary tuberculosis than many times the same sum expended on the building and support of sanatoriums. Inasmuch as it is not possible to isolate even a small proportion of the total number of cases it is useless to attempt by sanatoriums alone to produce any marked effect upon the general prevalence of the disease. Mr. Scott is, however, well pleased with the work done by the Didworthy Sanatorium, as although all the patients do not recover most of them receive distinct benefit and are able to return to work.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8553 births and 5379 deaths were registered during the week ending April 9th. The annual rate of mortality in these towns, which had been 19·7, 18·7, and 18·7 per 1000 in the three preceding weeks, declined last week to 18·4 per 1000. In London the death-rate was 18·6 per 1000, while it averaged 18·3 per 1000 in the 75 large provincial towns. The lowest death-rates in these towns were 7·0 in Walthamstow, 7·1 in Hornsey, 7·5 in Willesden, 7·6 in East Ham, 10·3 in Leyton and in Northampton, and 11·2 in Smethwick; while the highest rates were 21·4 in Bolton, 21·5 in Manchester, 21·7 in Swansea, 22·8 in Leeds, 23·4 Wolverhampton, 24·8 in Birmingham, 26·2 in Bootle, 27·7 in Hanley, and 29·3 in Norwich. The 5379 deaths in these towns last week included 583 which were referred to the principal infectious diseases, against 540, 532, and 640 in the three preceding weeks; of these 583 deaths 222 resulted from whooping-cough, 183 from measles, 57 from diphtheria, 52 from diarrhœa, 35 from scarlet fever, 25 from "fever" (principally enteric), and nine from small-pox. No deaths from any of these diseases were registered last week in Hastings, Southampton, Reading, Northampton, Burton-on-Trent, Coventry, or Tynemouth; among the other towns the highest death-rates from the principal infectious diseases were recorded in Brighton, Norwich, Hanley, Wolverhampton, Birmingham, St. Helens, Warrington, Bolton, and Rotherham. The greatest proportional mortality from measles occurred in Brighton, Norwich, Hanley, Stockport, St. Helens, Salford, Rochdale, Burnley, and Rotherham; from scarlet fever in Warrington and Newport (Mon.); from diphtheria in Bradford and West Hartlepool; and from whooping-cough in Wolverhampton, Walsall, Birmingham, Aston Manor, Wallasey, Warrington, Bolton, Bury, Salford, and Swansea. The mortality from "fever" and from diarrhœa showed no marked excess in any of the large towns. Of the nine fatal cases of small-pox registered in these towns last week three belonged to London, two to Hull, and one each to Stockport, South Shields, Gateshead, and Newcastle-on-Tyne. The number of small-pox cases remaining under treatment in the Metropolitan Asylums hospitals, which had been 74, 110, and 126 on the three preceding Saturdays, had further risen to 134 on Saturday, April 9th; 25 new cases were admitted during the week, against 26, 54, and 42 in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital at the end of last week was 1505, against 1634, 1585, and 1570 at the end of the three preceding weeks; 141 new cases were admitted during the week, against 176, 145, and 153 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 375, 383, and 370 in the three preceding weeks, further declined to 333 last week, but were 96 in excess of the number in the corresponding period of last year. The causes of 68, or 1·3 per cent., of the deaths in the 76 large towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Salford, Newcastle-on-Tyne, and in 34 other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Liverpool, Manchester, Burnley, Halifax, Rotherham, and South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 23·0, 22·3, and 20·6 per 1000 in the three preceding weeks, further declined to 20·3 per 1000 during the week ending April 9th, but was 1·9 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 16·1 in Paisley and 17·9 in Edinburgh to 23·9 in Dundee and 24·6 in Perth. The 671 deaths in these towns included 19 which were referred to whooping-cough, 14 to measles, seven to small-pox, seven to diarrhœa, five to diphtheria, three to "fever," and two to scarlet fever. In all, 57 deaths resulted from these principal infectious diseases last week, against 85, 86, and 72 in the three preceding weeks. These 57 deaths were equal to an annual rate of 1·7 per 1000, which was 0·3 per 1000 below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of whooping-cough, which had been 24, 29, and 23 in the three preceding weeks, further declined last week to 19, of which seven were registered in Aberdeen, six in Glasgow, three in Dundee, and two in Edinburgh. The deaths from measles, which had been 22, and 23 in the two preceding weeks, declined again to 14 last week and included eight in Glasgow, two in Dundee, and two in Paisley. The fatal cases of small-pox, which had been seven, seven, and five in the three preceding weeks, rose again last week to seven, of which four occurred in Greenock and three in Glasgow. The deaths from diarrhœa, which had been 18, 15, and nine in the three preceding weeks, further declined to seven last week and included three in Glasgow and two in Aberdeen. The fatal cases of diphtheria, which had been three, seven, and three in the three preceding weeks, rose again last week to five, of which three were recorded in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 185, 165, and 157 in the three preceding weeks, further declined last week to 138, but were 40 in excess of the number in the corresponding period of last year. The causes of 23, or more than 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 27·7, 30·4, and 28·5 per 1000 in the three preceding weeks, rose again to 29·7 per 1000 during the week ending April 9th. During the past four weeks the death-rate has averaged 29·1 per 1000, the rate during the same period being 18·7 in London and 19·5 in Edinburgh. The 216 deaths of persons belonging to Dublin registered during the week under notice showed an excess of nine over the number in the preceding week and included 19 which were referred to the principal infectious diseases, against 20, 14, and 20 in the three preceding weeks; of these, eight resulted from whooping-cough, four from measles, three from "fever," two from diphtheria, and two from diarrhœa, but not any from small-pox or from scarlet fever. These 19 deaths were equal to an annual rate of 2·6 per 1000, the death-rates last week from the principal infectious diseases being 2·3 in London and 0·8 in Edinburgh. The fatal cases of whooping-cough, which had been 13, five, and 11 in the three preceding weeks, declined again last week to 8. The deaths from measles, which had been four, five, and four in the three preceding weeks, were again four last week. The fatal cases of "fever," which had been one and two in the two preceding weeks, further rose last week to three. The two deaths from diarrhœa corresponded with the number in the preceding week. The 216 deaths in Dublin last week included 41 of children under one year of age and 48 of

persons aged 60 years and upwards; the deaths of infants slightly exceeded the number in the preceding week, while those of elderly persons showed a decline. One inquest case and two deaths from violence were registered, and 91, or more than 42 per cent., of the deaths occurred in public institutions. The causes of nine, or over 4 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Deputy Inspectors-General: T. D. Gimlette to Hong-Kong Hospital and L. H. Kelliett to Plymouth Hospital. Fleet Surgeons: J. L. Barrington to Haulbowline Hospital H. R. Osborne to the *Good Hope*; W. Bett to the *Russell*; E. B. Townsend to the *Britannia*, for Dartmouth sick quarters; and J. H. Stenhouse to the *Spartan*. Staff Surgeon W. H. S. Stalkartt to the *Monmouth*. Surgeon J. Fullarton to the *Cadmus*.

ROYAL ARMY MEDICAL CORPS.

Lieutenant J. Waddell is placed on temporary half-pay on account of ill-health (dated March 11th, 1904).

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain G. A. Lang, having resigned his commission in the Volunteers, ceases to belong to the Army Medical Reserve of Officers.

VOLUNTEER CORPS.

Royal Harrison Artillery (Volunteers): 7th Lancashire: The appointment of Joseph Grant-Johnston to a Surgeon-Lieutenancy is cancelled.

Rifle: 2nd Volunteer Battalion the King's (Liverpool Regiment): Captain D. Smart, from the Liverpool Volunteer Infantry Brigade Bearer Company, to be Surgeon-Captain and to be borne as Supernumerary whilst doing duty with the above Bearer Company (dated April 2nd, 1904); Lieutenant J. G. Martin, from the Liverpool Volunteer Infantry Brigade Bearer Company, to be Surgeon-Lieutenant and to be borne as Supernumerary whilst doing duty with the above Bearer Company (dated April 2nd, 1904). 2nd Volunteer Battalion the Durham Light Infantry: Surgeon-Lieutenant T. H. Livingstone resigns his commission (dated April 2nd, 1904). 9th Lanarkshire: Surgeon-Lieutenant W. J. Mackinnon to be Surgeon-Captain (dated April 2nd, 1904).

DEATHS IN THE SERVICES.

Inspector-General Timotheus J. Haran, R.N. (retired), at his residence in London, in his seventy-fifth year. He entered the Royal Navy as assistant surgeon in 1850, became staff surgeon in 1858, fleet surgeon in 1871, and reached the rank of inspector-general in 1886. He retired two years later. In 1851 he was assistant surgeon of and employed in charge of the *Harlequin's* boats in the attack on Lagos (mentioned in despatches), and he was also present in several subsequent expeditions to the rivers and lagoons adjoining against the expelled chief Kosoko. He was also employed repeatedly in boat cruising in the *Harlequin's* boats for the purpose of suppressing the slave trade on the West Coast of Africa. During the Crimean war he was assistant surgeon of the *Viper* in the Black Sea and was repeatedly in action. He took part in the battle of Eupatoria, the operations on the coast of Circassia, including the capture of Kertch, and the expedition in the Sea of Azov, the night attacks on the sea defences of Sevastopol, the capture of Kinburn, and the subsequent operations in the Gulf of Dneiper (Crimean and Turkish medals, the Azoff and Sevastopol clasp). He was assistant and additional surgeon of the *Boscawen*, flagship of the Hon. Sir F. W. Grey on the Cape of Good Hope and West Coast of Africa station, between 1857 and 1860 and landed at Ascension to attend yellow fever cases of the *Trident* in 1859. He was surgeon of the *Brisk* from 1860 to 1863, being employed at the Cape of Good Hope and East and West Coasts of Africa, and accompanying Commodore Wilmot in December, 1862, on a mission to the King of Dahomey—an enterprise then considered perilous and which entailed an absence from ship of six weeks. He was selected for service with the Royal Marine battalion which proceeded to South Africa in 1879. In 1881 he was employed at Haslar and was afterwards in charge of the Malta hospitals up to the year 1886, when he was promoted to inspector-general and appointed to Plymouth Hospital. Inspector-General Haran was a justice of the peace of Queensland and was honorary surgeon to the King.

Staff Surgeon William Rogers, R.N. (retired), on April 7th, at his residence at Saltash, Cornwall. The deceased entered the Royal Navy as surgeon in 1839 and was promoted to staff surgeon on Oct. 20th, 1845. He had seen no war service. Since his retirement he had lived at Saltash where he was much respected.

Colonel Robert de la Cour Corbett, D.S.O., R.A.M.C., principal medical officer of the Oudh and Rohilkhund districts, at Lucknow, on March 24th, aged 59 years. He entered the service in 1867 as assistant surgeon, became surgeon in 1873, surgeon-major in 1879, brigade-surgeon in 1893, and surgeon-colonel in 1898. He served with the Burmese expedition in 1886-87, during the later part of the campaign acting as principal medical officer of the Upper Burmah Field Force (mentioned in despatches, D.S.O., medal and clasp).

Lieutenant Colonel Nathaniel Alcock, A.M.S. (retired), at Bellevue, Ballybrack, co. Dublin recently. He joined the army in 1860, became surgeon in 1873, surgeon-major in 1875, and retired in 1889. He served in the Kaffir war of 1878 (medal). He had been employed for some time as medical officer in charge of the military prison, Dublin. The deceased was a much esteemed and deservedly popular medical officer who possessed considerable literary and scientific attainments. The loss of health mainly brought about by field service and exposure in the Kaffir war, unfortunately led to his comparatively early retirement, by which the Army Medical Service lost an able and promising member.

DENTISTRY IN THE ARMY.

It is only of late years that the importance of dentistry has been recognised by military authorities. A soldier to go through an arduous campaign with efficiency must keep in good health, but unless his teeth are in good order he cannot masticate his food properly and his digestion will therefore be defective. Military rations in the field are not always readily assimilable; on the contrary, they are often supplied in a highly indigestible form, so the soldier more than the civilian should have every part of his assimilating apparatus in good working order. In the *Deutsche Militärärztliche Zeitschrift* for January Dr. Richter discusses the subject of military dentistry at considerable length. It was in Saxony that steps first were taken to instruct soldiers how to take care of their teeth. On April 3rd, 1902, a Ministerial circular containing instructions regarding the hygiene of the mouth was issued and in the following March a similar procedure was generalised for the whole of the German army. Lectures on the subject by qualified medical officers have also been instituted and non-commissioned officers are required to see that the inculcated theories are carried out. A few dental dispensaries are now in operation in some of the chief garrisons of Saxony and Bavaria, including Dresden and Leipsic, the charges being extremely moderate. Tooth-stopping, for example, costs 6*d.* only and a denture of eight teeth can be fitted for 7*s.* The *personnel* of these dispensaries is furnished by the dentists (qualified and probationary) who are fulfilling their term of compulsory military service. The reason that these establishments are as yet comparatively few in number is not due to budgetary restrictions, for the expenditure involved is trifling, but to the fact that dentists in Germany are extremely scarce. Whereas close on 30,000 medical men are engaged in the active exercise of their profession throughout the empire the total number of dental surgeons does not exceed 1800. And yet, according to Dr. Richter, the scope for skilled dentistry is considerable. Out of 1000 persons examined by him he found that on an average each individual had 5·9 teeth in his mouth that were more or less decayed. A perfectly sound set of teeth was extremely rare. In an infantry regiment there would be need, he says, of 2300 tooth extractions every year, 2100 teeth would require stopping, and 50 men would be candidates for dentures, partial or complete. Every recruit, continues Dr. Richter, should be taught that with care the usefulness of his teeth can be greatly increased and their duration prolonged. Caries in his opinion is not hereditary. Every night before going to bed the mouth should be thoroughly rinsed and the teeth well scrubbed with a wet brush. Unless this is done fermentation will take place, acids will be generated, and decay facilitated. During the daytime the mouth is seldom as quiescent as it is during sleep. Talking serves to keep the teeth clean and toothpicks after meals are very useful. Dentifrices and washes, in Dr.

Richter's opinion, are worse than useless. Nothing can be better than mechanical cleansing with a wet brush.

A BRITISH OFFICER'S REPORT ON THE FIGHT AT CHEMULPO.

A long extract from a letter by Captain Lewis Bayly of H.M.S. *Talbot*, dated Feb. 20th, has been published, from which we reproduce (from the *Standard* of April 12th) the following very interesting medical details connected with a naval engagement in modern war:—

In connexion with the engagement between the Russian ships *Varyag* and *Korietz* and the Japanese fleet I beg to inclose the following remarks:—Chaplain Roudneff states that the carrying away of the wounded on stretchers became impossible; several men were carrying them when shot down and only five men altogether were brought down to the doctor below the water-line, while of these five the doctor of the *Varyag* says two were practically dead when they arrived. They have held classes on board the *Varyag* to instruct men in "first aid"; bags of bandages had been served out and the doctor says that some lives were thus saved by being thus treated. The Russian sailors bear their operations wonderfully well. There were 150 men employed on the *Varyag's* upper deck during the action and nearly all the killed and wounded were out of this 150, which is 28 per cent. killed, 45 per cent. wounded. It must not be forgotten that having no gun shields her gun crews were practically unprotected and that shrapnel shell were largely used, to judge by the holes in the boats, funnels, &c. All was quiet in the engine room, as though they had been at target practice. In one stokehold (they have five with no fore and aft bulkhead) the water came up to the floor of the furnaces but did not get into the other stokeholds.

Further on and at the end of his communication Captain Bayly goes on to add that—

A very great deal of shrapnel must have been fired at the *Varyag*, judging by the round holes, and not much lyddite, for there seems to have been no inconvenience from poisonous gases. Much trouble has been caused to the wounded on account of the pieces of cloth that are constantly being extracted. Many men are wounded with punctures, holes about as large as the top of the little finger, and from a quarter of an inch to half an inch or one inch deep, but with no foreign substance such as iron, &c., being present in the wound, and no sign of scorching round the mouth of the wound.

THE WAR IN THE FAR EAST.

The Japanese Red Cross Society has a roll of between 800,000 and 900,000 members and its organisation leaves little if anything to be desired. Nearly 300 medical men are employed in its service and some 1600 qualified nurses are ready for immediate work in connexion with the war. The two permanent hospital ships of the society have accommodation for 400 patients.

The *Times* states that "200 Canadians who served in South Africa with medical and bearer corps have been engaged by the Japanese Government to serve in the present war in a similar capacity. The Japanese authorities have shown a complete knowledge of Canadian participation in the South African war in the selection they have made."

The executive committee of the Russian Red Cross Society, says the *Novosti*, has received advice from Athens that in the Russian Embassy there many Greek medical men have enrolled their names with the request that they may be sent to the theatre of war to serve in the hospitals.

THE LATE FREDERICK CHARLES STEARN, SURGEON, R.N.

The funeral of Surgeon F. C. Stearn, one of the medical officers of Portsmouth Dockyard, took place on April 6th with full naval honours. The service in the Dockyard church was held by the Rev. Dr. Shone and was attended by Rear-Admiral Henderson and all the Dockyard officers, Flag-Captain Sir R. K. Arbuthnot representing the Commander-in-Chief. Afterwards a procession was formed, headed by a firing party. Then came the band of the Royal Naval Barracks, preceded by a field gun carriage on which was the coffin covered with a Union Jack and bearing the deceased officer's hat and sword. Six surgeons were pall bearers. Carriages with private mourners followed and after them walked a large number of naval and Dockyard officers. The interment was at the Highland-road Cemetery and at the close of the service the usual three volleys were fired over the grave.

NAVAL MEDICAL SUPPLEMENTAL FUND.

At the quarterly meeting of the directors of the Naval Medical Supplemental Fund, held on April 12th, Sir J. N. Dick, K.C.B., being in the chair, the sum of £50 was distributed among the several applicants.

The *Army and Navy Gazette* of April 9th states that Surgeon-General G. J. Evatt, C.B., retired list, A.M.S., has been invited to contest the Fareham Division of Hampshire at the general election in opposition to the sitting member, Mr. A. H. Lee, Civil Lord of the Admiralty.

Correspondence.

"Audi alteram partem."

SYPHONAGE IN THE GREAT INTESTINE.

To the Editors of THE LANCET.

SIRS,—A reference to Dr. R. W. Leftwich's latest work on "Syphonage and Hydraulic Pressure in the Large Intestine" has served to confirm the opinion I formed from the evidence produced in his earlier papers—viz., that he is in error in supposing the great intestine to act as a syphon in man during life. The chief observations on which he bases his theory of syphonage are (putting them in brief) the following:—

1. That a piece of garden hose, bent so as to represent the various curves and segments of the colon, acts as a syphon with substances which are only partially fluid in nature, such as glycerine. The criticism I offer to this observation is that the normal contents of the great intestine are of such a consistency that they cannot be made to flow in a tube even with rigid walls, much less in one with flexible and unequal walls. Further, the curves given by Dr. Leftwich to his artificially constructed colon have no resemblance to the actual flexures of the colon as seen in the human body, either living or dead.

2. That the theory of syphonage offers the only full and satisfactory explanation of the arrangement and fixation of the human great intestine. Unfortunately Dr. Leftwich had no time, as he himself explains, to examine the arrangement in animals allied to man or to consult the literature on this subject, otherwise he would have found that the disposition of the great intestine of man does not differ in principle from that found in other mammals, in which, he is careful to explain, there can be no colic syphonage. It is certainly true amongst genera of primates that the more they are habituated to the upright posture the more firmly is their great intestine fixed to the posterior abdominal wall, but this feature finds a full and satisfactory explanation in the alterations in the respiratory movements of the abdominal viscera and need for greater fixation of the abdominal contents, caused by the change of posture.

3. That the theory of syphonage explains the arrangement of the fibres of the muscular coats of the human colon. The muscular arrangement of the human colon is not peculiar, it is similar to that of all mammals which live on a mixed or vegetable diet and in which the contents of the great intestine are more or less of a solid consistency. The disposition of the longitudinal muscular coat of the colon in tænia is an adaptation for the production of the peculiar peristaltic movements which help in the digestion, absorption, and propulsion of the semi-solid contents of the colon.

4. That the tonicity or contraction of the tænia of the colon can render the walls of that viscus rigid and thus fit it to act as a syphon. No one, so far as I know, has ever denied tonicity to either the longitudinal or circular coat of the colon, but I am unable to conceive that the action of the longitudinal coat can have any effect on the bowel other than to shorten it. The only manner in which the walls of the bowel could be rendered rigid enough to serve as a syphon would be to suppose that the circular fibres of the colon, which alone can alter the lumen, possessed an active power of elongation. Dr. Leftwich, however, in harmony with modern physiological teaching, regards such an action as impossible, but, on the other hand, he refuses to accept physiological evidence of the importance of the peristaltic movements of the great intestine, yet the muscular coat of six inches of the human colon is nearly three times the weight of an equal segment from the small intestine.

The only manner in which the cæcal or colic wall could be rendered rigid enough to serve for syphonage would be to create a negative pressure within the cavity of the abdomen. This effect could be obtained by placing the patients, not in the upright posture, as Dr. Leftwich places them to obtain colic syphonage, but in a head-down posture, for we know that in such a posture the negative pressure within the abdomen is sufficient to cause ballooning of the bladder, vagina, or rectum if the orifices of these viscera be opened. In the upright posture, on the other hand, the intestinal contents are subjected to a pressure of from 10 to 20 millimetres of mercury, the pressure rising three or five millimetres with each expiration, from 20 to 30 millimetres with

each flexion of the trunk, and from 60 to 70 millimetres on attempting to lift a heavy weight from the ground.

I think that Dr. Leftwich will admit that a tube such as the living colon, with its flexible, unresisting walls, with a musculature which can diminish, but cannot enlarge, its lumen, with contents that cannot flow, and which in the upright posture is subjected to a constant and varying positive pressure, cannot act as a syphon.

I am, Sirs, yours faithfully,

London Hospital Medical College, April 9th, 1904. A. KEITH.

THE PROPOSED WAR OFFICE CHANGES AND THEIR BEARING ON THE ARMY MEDICAL SERVICE.

To the Editors of THE LANCET.

SIRS,—Now that the intentions of the War Office Committee are promulgated it is apparent that the further retrogressive step of depriving this medical service of that power of making its wants and suggestions heard through its head which was granted under the pressing and conclusive teaching of the South African war is to be taken, for it is not probable, the trend of the Government being as is shown in the reception of the two former reports, that any modification will be brought about by action in the House of Commons. To speak of the proposed arrangement as "strengthening the status and power of the head of the medical services" will seem to many as wanting in cogency when viewed by the past and as unreasonable to those who have actual personal knowledge of the matter in question. Experience indicates very clearly that the present step is but an additional one in the downward course and that it requires but a few army orders to bring the medical service into the old unsatisfactory subjection in which it was in the days of its degradation and to reduce its influence in army well-being to the standpoint thought sufficient by the military official occupying the post of adjutant-general in the Army Council.

Well, Sirs, I do not propose to repeat any of the excellent observations you have made on this subject in your leading article of April 2nd (p. 943), but to ask space to make a few further and last remarks on three practical points which are embodied in the War Office Committee's decisions.

1. By making the medical service one of a group of departments under the adjutant-general its director-general becomes one of his subordinate officials. All communications, proposals, and recommendations emanating from it will go to him and with him will reside the power of giving expression to them or not, of deciding for or against them. He will stand between the medical service and the higher State officials, the controlling voice of its needs and wishes. The adjutant general may be younger in years of army service and experience than the director-general and of less army rank, it is certain that he cannot have the same professional and technical knowledge; he is apparently to be changed every few years—a detail not making for continuity in aim and practice—and yet into his hands are to be given the supervision and control of a professional and scientific body of men with whom rests in no small degree the well-being of the army in peace and war. On a business basis, does such a proposal commend itself? How, under such an arrangement, can any honest and true responsibility be assessed for future untoward results such as the past has revealed?

2. On the statement in a former report of the committee to the effect that the selection of officers serving under them would be left to the respective heads of the Army Council presumably the selection to the post of director-general, left by Mr. Brodrick's scheme in the hands of the Commander-in-Chief and the Advisory Board, will fall to the adjutant-general. In the light of the past does the placing of such an important post at the discretion of this official suggest itself as desirable or making for efficiency? The bad points of the old system—favouritism, absence of guarantee of advancement of the best man, the necessity of being a *persona grata*—have every opportunity for being reproduced.

3. The one reason advanced for placing the director-general (and so the department) under the adjutant-general is that "sanitation in peace and war is closely bound up with discipline," a view with which many will be in agreement so far as observance of the rules, enforced if necessary by punishment, is essential for success, yet beyond this limited range its bearing on the course taken is not apparent. But be the validity of their conclusion what it may it surely was no less recognisable by the military advisers of the late Secretary of State for War when they took the important step now apparently to be retraced than to the three heterogeneous members of the present committee only one of whom is a military man. Discipline, however, in the army is virtually vested in the combatant branch (with a very limited exception)—commanding and company officers, and the enforcement of this principle in its completeness will relegate this technical and important duty of sanitary control to those who already, especially in war, have sufficiently onerous work and who have not the necessary knowledge and training to guide them in its performance. The Crimean commission, basing its conclusion on the vast importance of sanitation to the army, enforced the necessity of placing "the medical officer in the position to which the dignity of his profession and the great services he renders justly entitle him" for assuring "to his advice and opinion that weight and influence in the administration of the army which are necessary to secure the health and to maintain the efficiency of the troops" by, among other important steps, requiring that "medical officers were to be invariably consulted in all matters affecting the health of the soldier in barracks." The committee of 1904 also make this branch of scientific knowledge its apparent ground of action but inverting the procedure previously thought essential reduce it to a question of discipline, subordinate the professional head of the medical service to the combatant section of the War Council, and only summon him "whenever his advice and special knowledge are required," the Council deciding when this is necessary; precisely the line of action which the military authorities took in the past when by army orders and practice they reduced to a nullity all the valuable proposals which the Crimean commission thought necessary for army efficiency and the action based thereon. The committee points out that the Royal Army Medical Corps "exists to serve the army in a most important capacity" in support of the line it takes, but granting that it cannot be independent of all higher military authority yet on this basis it results, its duties being so dissimilar to those of the other sections generally, that it must have a freedom to express its wants and a freedom to act untrammelled by other officials not versed in its particular professional requirements and especially by some possible higher one holding the views of a former adjutant-general on sanitation as "a fad."

From the Crimean war downwards (possibly even previously) one dominant feature stands out conspicuously—an inability on the part of the combatant section to comprehend the aim and scope of the medical service, to sympathise with its wishes, or to assist it in its duties. The steps towards improvement hitherto taken have been obtained in spite of it and mainly by outside help, with the result that no opportunity has been lost to neutralise the advantages gained, and the recent experience has been but an instance in point. The trend of medico-military affairs being as they are it behoves the aspirants to this service to note well the object lesson passing under their eyes, the instability of the conditions under which they will exercise their professional career, and to weigh carefully all their circumstances before embarking on a course which has proved anything but satisfactory to many of their predecessors.

I am, Sirs, yours faithfully,

FRANCIS H. WELCH,
Lee, April 9th, 1904. Surgeon-Colonel (retired), M.S.

THE "N" RAYS AS A PROOF OF DEATH.

To the Editors of THE LANCET.

SIRS,—As the living body emits "n" and "n_1" rays (of Blondlot) from the brain, spinal cord, heart, muscles, &c., may it not be worth while trying whether this fact will serve as a simple test for death? The rays are revealed to the eye by their effect in brightening ("n") or dulling ("n_1") the phosphorescence of sulphide of calcium.

I am, Sirs, yours faithfully,

Croydon, April 6th, 1904. JOHN MUNRO.

*** Professor Blondlot's experiments do not appear to have been confirmed in this country but we publish this note because of the interesting suggestiveness.—ED. L.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The Health of Convicts in the Andaman Islands.—The Increasing Plague Mortality.—Further Particulars of the Mulkowal Disaster.

THE annual report on the penal settlement of the Andaman Islands has recently been published. The islands are admittedly unhealthy and the chief diseases are malaria, dysentery, and phthisis. Phthisis is said to be encouraged by insufficient lateral sleeping-floor area in the convict barracks and by insufficient clothing, especially during the rains. Against malaria mosquito brigades have been started in every station and village in the settlement and the general administration of quinine is to be extended further. Some curious remarks are made in the report concerning the use of the mosquito net. It is considered impracticable because it interferes with the perflation of air. I quite agree that "to prevent the insidious infection of phthisis there must be the freest perflation of air possible in dwellings," but that this view "prohibits the mosquito net as a remedy for malaria in Port Blair Convict Barracks" is questionable. The report goes on to say that "as both phthisis and malaria are equally dangerous in the settlement a choice must be made between free perflation of air and the mosquito net, and since the mosquito brigade is a good remedy for malaria the mosquito net may be left out on consideration." Here we have the writing of a civilian and not that of the medical officer. The mosquito net does interfere somewhat with the currents of air but not sufficiently for it to be condemned on that account, and its manifest advantages in preventing a malarious patient being dangerous to others should have insured its use. The want of floor space—in other words overcrowding—would seem to be the chief evil.

The period of the annual plague maximum mortality throughout India is now approaching and the death-rate has been steadily rising. The total number of deaths from plague last week was 33,517, being nearly 5000 more than in the previous seven days. The principal increases are recorded in the United Provinces, the Punjab, the Bombay Presidency, and Bengal. The totals published are: Punjab, 6431 deaths; Bengal, 4386; Bombay Presidency, 7140; Bombay city, 925; Karachi, 145; Calcutta, 230; Madras Presidency, 525; Central Provinces, 2290; Mysore State, 383; Hyderabad State, 577; Central India, 955; Rajputana, 621; and Kashmir, 405. It is a curious circumstance that the outbreaks in Bombay city and in Calcutta are both behind their usual seasonal developments. The recrudescence in Karachi is very severe and Allahabad has also recently suffered tremendously.

The mystery of the Mulkowal disaster is gradually leaking out. It appears that the Plague Research Laboratory of Bombay notified the Punjab Government of its inability to supply the full quantity of the prophylactic and at the same time intimated that the fluid which would be sent would be prepared in a different way. It was soon noticed that a much larger proportion of the new fluid was unfit for use—in fact, I have it from one of the operators that the number of bottles he thought it advisable to discard was very considerable. It was reported that abscesses occurred more frequently with the new fluid which suggested that it contained impurities. Moreover, the reaction was feeble and the occurrence of a few deaths closely following inoculation threw further suspicion on the new fluid. While arrangements were being made to discontinue its use the deplorable calamity occurred. 19 persons were inoculated from one bottle and all of them contracted tetanus and died. No blame is attached to the inoculating officer. The circumstances point to the conclusion that the fluid had been contaminated before it reached the Punjab. How this particular bottle became poisoned still remains a mystery. The disaster has proved a death-blow to inoculation in India.

March 26th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Work of the Port Sanitary Authority during 1903; Liverpool and Sea-borne Infectious Disease.

IN an important seaport like Liverpool, which is open to ships carrying merchandise and passengers from all parts of the world, there is no small liability of infectious disease when it may happen to exist on incoming vessels being brought to the port. The port sanitary authority by careful watchfulness is guarding against the occurrence of such mischief, being aided in this effort by the Mersey Docks and Harbour Board. In the report of the port sanitary authority for 1903, recently issued, Dr. E. W. Hope deals with the manner in which disease is combated when a vessel on arrival in the Mersey is suspected of being infected with any infectious disease. She is at once boarded by the medical officer and is not permitted to dock until he has thoroughly examined her. If the vessel be found free from disease the captain receives a certificate to that effect and is then allowed to take his vessel to dock. The report states that there are statutory powers authorising the detention of vessels infected, or believed to be infected, with cholera, plague, and yellow fever, but there are no statutory powers to prevent other ships which may have small-pox, typhus fever, &c., on board from entering the docks. However, by an arrangement with the Mersey Docks and Harbour Board, any dangerously infected vessel may be prevented from entering the docks until dealt with by the medical officer. Thanks to this valuable provision the port of Liverpool is exceptionally well protected. With regard to the hospital accommodation it is mentioned that the original port hospital in the Sloyne has recently been added to and improvements have been made in bathing and lavatory accommodation. An additional pavilion and a separate home for the nurses, as also a laundry and a disinfecting apparatus, were erected in 1902. There is now accommodation for 50 patients. Patients suffering from infectious disease and requiring to be removed to the port hospital are conveyed by the port sanitary authority's tug or by the ship's boat to the hospital jetty and landed. The majority of patients, however, are removed to the city hospitals from the dock after the vessel has been berthed, this being a more convenient plan than sending all sea-borne cases to the port hospital. The number of ships from infected ports medically inspected during the year was 119 and vessels bound for Manchester (*viâ* Ship Canal) from infected ports are dealt with by the Liverpool port sanitary authority under an order of the Local Government Board. The Liverpool authority has also accepted responsibility for the accommodation in a Liverpool hospital of any case of small-pox which may be present on board a Manchester-bound vessel. This is a voluntary arrangement between the authorities of Liverpool and Manchester. There is an interesting paragraph in the report about rats as disseminators of plague. Many methods have been tried to catch these pests but trapping has yielded, so far, the best results. This can only be done properly by expert rat catchers. Rats when caught are sent to the corporation bacteriologist who reports on the presence of plague amongst them, or they are killed and the carcasses destroyed in the ship's furnaces. During last year 5083 rats were caught on board 98 ships, but none were found to be infected with plague. Several pages in the report are occupied by a codification of the modifications in quarantine measures and the additional regulations regarding rats which are the outcome of the International Sanitary Convention in Paris in October last. On the subject of yellow fever Dr. Hope points out that it is now concluded that this disease, like malaria, is transmitted by a species of mosquito found plentifully in the haunts of yellow fever. During the year 16 ships brought cases of small-pox, or suspected small-pox, to the port, notably from Bilbao, Barcelona, Constantinople, and Smyrna. 32 cases of enteric fever, six cases of scarlet fever, 12 cases of measles, one case of anthrax, 32 cases of phthisis, and 18 cases of beriberi occurred in Liverpool-bound vessels and were reported to the authority. As to the emigrants, only 79 out of the large total of 265,918 were found to be suffering from infectious disease. These were children affected with small-pox, chicken-pox, measles, and scarlet fever. During the year the port has remained entirely free from those forms of sickness which tend to cause interference with commercial business by leading to quarantine in foreign ports.

Birkenhead Infectious Diseases Hospital.

The desirability of providing increased accommodation at the Birkenhead Infectious Diseases Hospital has become a matter of urgency and the matter has engaged the attention of the health committee of the Birkenhead town council for some time past. The committee adopted a motion, which will require ratification by the town council, to the effect that various alterations and additions should be made at

an estimated cost of about £13,000. This estimated expenditure will comprise £4294 for alterations and additions to the administrative block; £4940 for the erection of two additional ward pavilions, each to contain 12 beds, with day-room attached; £858 for a lodge and discharging block, to be erected at the main entrance to the hospital; £736 for the construction of a laundry block; £1050 for the provision of machinery, with the addition of a reserve boiler; and general furnishing about £1000.

The Harveian Oration at the Royal College of Physicians of London.

Dr. Richard Caton, consulting physician to the Royal Infirmary and emeritus professor of physiology at the University of Liverpool, is announced to deliver the Harveian Oration at the Royal College of Physicians of London in June next.

Infirmary for Children.

The appeal made by the committee of the Liverpool Infirmary for Children on behalf of the rebuilding fund has resulted in the receipt of £39,269 up to March 28th. £25,000 are still required to make up the desired amount.

Sanitary Inspectors' Examination Board.

On April 5th the first of a five days' examination, under the Sanitary Inspectors' Examination Board, took place at the University of Liverpool. This is the first occasion upon which the examination has been held in the provinces. Dr. Hope, the medical officer of health of Liverpool, had arranged the preliminary details of the examination. There were only 14 candidates, including several who had been trained at the Liverpool School of Hygiene.

Anthrax in Cheshire.

The Board of Agriculture has issued an order with regard to the slaughter of animals in cases of anthrax to the effect that the council of the administrative county of Chester may, if it thinks fit, cause to be slaughtered any animal affected with anthrax or suspected of being so affected. The slaughter of animals shall be conducted in such a mode as will, as far as possible, prevent effusion of blood. Where the animal slaughtered was affected with anthrax the owner shall be compensated to the extent of one half the value of the animal immediately before it became so affected and in every other case the compensation shall be the value of the animal immediately before it was slaughtered. Provided that the owner of the animal gives notice in writing to the council or its inspector or other officer that he objects to the animal being slaughtered, it shall not be lawful for the council to cause that animal to be slaughtered except by the further special authority of the Board of Agriculture and Fisheries being first obtained. On each occasion of slaughter under this article the council shall send to the Board of Agriculture and Fisheries a report stating the number of animals slaughtered, the mode of slaughter and of disposal of the carcasses, and the compensation paid in respect of each animal.

April 12th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Small-pox in Bristol.

BRISTOL has been entirely free from small-pox since the end of September last but it is probable that there will now be some cases infected by a tramp who slept in a large common lodging-house in the city on March 29th and who was found on April 2nd in the Keynsham workhouse suffering from the disease. The man had left Newcastle-on-Tyne on March 13th, tramping south through Worcester and Gloucester. It is nearly eight years since small-pox was spread in Bristol through the agency of a common lodging-house and on that occasion there were 20 cases.

Vagrancy in Gloucestershire and Somersetshire.

In 1882 a County Vagrancy Committee was formed in Gloucestershire, three members being appointed by the Court of Quarter Sessions and one by each of the boards of guardians in the county. The chairman of this committee presents to the county council a quarterly report of considerable value, setting out the number of tramps who have visited the various casual wards during a specified period. In the first quarter of the present year 17,873 tramps were admitted to the wards of the Gloucestershire workhouses, an increase over the corresponding period of last year of 4147. This increase is almost entirely confined to the Gloucester, Westbury, and Winchcombe unions. At the last meeting of the county council the chairman of this committee made the satisfactory statement that there was a distinct decrease in the number of children being dragged about the country by tramps. At the meeting of the Somerset county council, held on April 4th, a motion was adopted urging the Local Government Board to consider what measures could be adopted for the establishment of a more effective and uniform system of dealing with tramps throughout the country.

Penybont Health Report.

Mr. Wyndham Randall, the medical officer of health of the rural district of Penybont in Glamorganshire, has just issued his annual report from which it appears that among an estimated population of 15,455 persons the birth-rate in 1903 was 33·3 per 1000, the death-rate from all causes 14·7 per 1000, and the infantile mortality-rate as low as 99 per 1000 births. The county asylum is situated in the Penybont district and Mr. Randall records for several diseases the death-rates in the asylum alone and in the rural district excluding the asylum. In the asylum the phthisis death-rate was 16·6 per 1000 and the cancer death-rate 3·7 per 1000, while in the rural district the death-rate from these two diseases was 1 per 1000 and 0·6 per 1000 respectively.

Cornwall County Nursing Association.

The annual meeting of the Cornwall County Nursing Association was held at Truro on April 8th. It was reported that during 1903 six new districts had been formed, making a total of 34 district associations affiliated to the society. 42 nurses had been trained since the commencement of the work, of whom 26 are still working for the association. The financial statement showed that the income amounted to £361 and the expenditure to £660, the deficiency having been met by taking about £200 from the capital.

April 11th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The late Sir Philip Crampton Smyly.

THE death of Sir Philip Crampton Smyly came as a surprise in the end, although he had for some time been a severe sufferer from gout. His scientific attainments, no less than his social connexions, made him one of the most prominent representatives of the medical profession in the country. He had been President of the Royal College of Surgeons in Ireland and representative of the College on the General Medical Council and honorary surgeon to the late Queen Victoria. At his death he was honorary surgeon to the King. By his marriage with a daughter of the third Lord Plunket, he was brother-in-law to the Archbishop of Dublin and Lord Rathmore. Sir Philip Smyly was only ill for a few hours.

Ballinasloe District Lunatic Asylum.

Much interest has been felt in the West of Ireland for months as to who would be the successor to the late Mr. R. V. Fletcher as resident medical superintendent of the Ballinasloe District Lunatic Asylum. The election, which was in the hands of the joint committee nominated by the Galway and Roscommon county councils, took place on April 11th and resulted in the appointment of Dr. James St. Lawrence Kirwan, recently the junior medical assistant in the asylum. A letter was read from the Lunacy Department, stating that the Lord Lieutenant concurred in the resolution of the board fixing the salary of the resident medical superintendent at £500 per annum with £120 a year as allowances.

The Freedom of the City of Belfast for Mrs. Pirrie.

The corporation of the city of Belfast has unanimously decided to confer the freedom of the city on Mrs. Pirrie. The compliment is paid "in recognition of her signal services to the community in inaugurating and raising by her untiring zeal and personal influence a fund sufficient for the erection, equipment, and endowment of the Royal Victoria Hospital, which was instituted to commemorate the Diamond Jubilee of Her late Majesty Queen Victoria and to confer lasting benefits upon the citizens of the city of Belfast."

The Right Hon. W. J. Pirrie has already had this honour conferred upon him in recognition of his great services to Belfast during the period of his Lord Mayoralty. It is unique in the annals of municipal life for husband and wife to have such honours bestowed upon them.

Health of Belfast.

Since the commencement of the present epidemic of small-pox in Belfast, 46 cases had been admitted to the Purdysburn Hospital, 30 were discharged, two died, and there were 14 still remaining in hospital. There were 147 admissions to the intercepting hospital and 16 "contacts" remain at present. Between Feb. 21st and March 19th there were notified 38 cases of scarlet fever, 24 of erysipelas, 20 of typhoid fever, 18 of diphtheria, 5 each of simple continued fever and small-pox, 4 of puerperal fever, and 2 of croup. The deaths from zymotic diseases were 56 and those from phthisis and diseases of the respiratory organs were 96 and 213 respectively, making a total of 309 from the last two causes. Very few cases of typhoid fever have been notified during the month. The deaths from whooping-cough keep high and the mortality from respiratory diseases has been exceptionally high of late. The prevalence of small pox in Glasgow accounted for its being carried to Belfast. It was strongly urged at the meeting of the city corporation on April 5th that something should be done to deal with the tuberculosis problem (96 deaths from consumption occurred in the past month) and it came out in the discussion that plans are to be considered shortly for a building to accommodate 100 patients.

The Belfast Ophthalmic Institution.

At the annual meeting of the friends of this charity, held on April 7th, it was reported that there were 171 intern and 2184 extern patients during the past year. The year closed with a debt of £54 in addition to one of £100 to the "alteration and additional building account." The honorary secretary said that if the committee would collect £100 before the next annual meeting he would augment it by £50. A vote of thanks was passed to the medical staff of the hospital for their services.

Newry Guardians and the Medical Officers of the Newry Union.

At a meeting of the South Down branch of the Irish Medical Association held in Newry on April 7th it was decided that the medical officers of the Newry union should write to the Newry board of guardians for instructions how to act in cases of emergency, because, as matters stand at present, they are precluded from having consultations except in ordinary cases in the daytime. In the latter cases the existing fee allowed by the guardians corresponds with that which they are prepared to accept but in all other cases which are most likely to arise every medical man practising in the neighbourhood refuses to accept the fees at present offered, and they feel that they must in the interest of their patients be placed in a position to be able to obtain immediate assistance in case of necessity so as to relieve suffering or to save human lives.

April 13th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Chloroform and Oxygen Anæsthesia.

AT a meeting of the Academy of Medicine held on March 29th M. Kirmisson gave an account of his experience in the use of chloroform mixed with oxygen as an anæsthetic, being a revival of a method which had been formerly tried by Paul Bert upon some patients under the care of Péan. M. Kirmisson uses R. de's apparatus and gives a mixture of vaporised chloroform and oxygen in the proportion of from two to three grammes of the former with from three to four litres of the latter. M. Kirmisson's experience of the method comprises 229 cases of anæsthesia in children aged from six months to 15 years. No untoward effects were observed. The anæsthetic sleep is perhaps rather longer in coming on than with chloroform alone, but, on the other hand, the period of excitement is absent and vomiting is very rare. By this method M. Kirmisson has kept a patient anæsthetised during an operation lasting 52 minutes with only 16 grammes of chloroform. He considers that the method will find its principal application in abdominal surgery and in gynæcology where operations are likely to be prolonged. The use of oxygen causes a slight increase in the expense of administration compared with that of chloroform alone but this is compensated by the saving in the amount of chloroform used.

A New Local Anæsthetic.

At the same meeting of the Academy M. Forneau and M. Billon gave an account of a new local anæsthetic which has the same properties as cocaine but is only half as poisonous. Moreover, it has no vaso-constrictor power which is one of the chief objections to cocaine. The body belongs to the group of amino alcohols and its name is hydrochlorate of A-dimethyl-amino-B-benzoyl-prophenol, or more simply amyleine. M. Reclus and M. Chaput have used it in general surgery, M. de Lapersonne in ophthalmology, and M. Sauvez in dentistry, all with success.

Treatment of Cancer of the Skin by the X Rays.

Still at the same meeting M. Leredde gave an account of the above treatment. The therapeutic use of the x rays after a period of somewhat risky groping in the dark could now be applied under definite regulations, at all events to the treatment of malignant affections of the skin, in which really remarkable effects had been obtained. The forms of disease to which this method is specially applicable are those called by M. Leredde "*épithéliomes adultes*"—that is to say, those in which the field of altered tissue is limited by a raised edge (*bourrelet*). Such cases of epithelioma are serious or at all events tend to become serious. Cure is brought about by liquefaction and disintegration of the malignant tissues which are completely destroyed, showing the selective action of the rays upon cancerous tissue. If pain is present it often disappears after the first sitting and the same is the case with any offensive smell. The æsthetic results are excellent and cure may be considered as absolute when the treatment is pushed far enough. Radiotherapy may be combined with other measures but at present it is the treatment of election for certain localised growths such as epithelioma of the eyelids, epithelioma of the nose, and in many cases where the patient refuses the use of the knife.

The Isolation of the Tuberculous at Paris.

The fifth committee of the Municipal Council of Paris has given up the idea of establishing an isolation hospital at Montmorency owing to the opposition of the inhabitants and is now casting its eyes upon the Chateau of Dugny close to Bourget (Seine). The building lies in a plain and its interior arrangements would lend themselves well to the required purposes. It stands in a park with an area of 125 hectares, partly wood and partly meadow land, which is traversed by a little stream, the Morée. The principal building has a frontage of not less than 70 metres and the interior is divided into 200 rooms. M. Mesureur, the director of the Assistance Publique, estimates that 1000 tuberculous patients could be isolated at Dugny. The committee has been over the chateau and in the absence of any opposition the Assistance Publique thinks that the building will be ready for reception of the patients before the end of the current year. Besides this M. Mesureur proposes to hand over for the treatment of tuberculosis the annexe of the Hôtel Dieu, the Laennec and Broussais Hospitals, and the 27th Bastion. These will provide a total of 1184 beds of which 167 will be reserved for surgical cases. Various wards will be also allotted for tuberculous patients at the Tenon, Boucicaut, Saint Antoine and Saint Louis Hospitals providing another 909 beds. Finally, two anti-tuberculous dispensaries will be established, the one at the Tenon Hospital and the other at the Laennec Hospital. The expenses, which are estimated at about 2,000,000 francs, will be met partly by loan and partly out of the funds of the *pari mutuel*.

The Chemical Constitution of Living Beings.

At a recent meeting of the Academy of Sciences M. Quinton laid before those present the results of a long and patient research which throws an unexpected light upon, and adds support to, the Darwinian theory of the evolution of species. The research concerned sea water. In M. Quinton's view sea water is the natural source from which, as Haeckel believes, those elementary bodies have their rise which in turn develop into every other species, human beings included. The environment in which the anatomical elements of living creatures exist is neither more nor less than a marine one. Our tissues and cells continue to

exert their functions in a fluid the composition of which presents the closest resemblance to that of sea water. Hitherto the number of elements entering into the composition of a living body has been considered to be about 15. But the researches of M. Quinton have shown the existence of traces of at least some 14 other elements which are also found in sea water, such as copper, lead, silver, gold, and others. Further, if an animal be bled to exhaustion (*saigner à blanc*) and the place of the blood be supplied by sea water on the morrow the animal will have regained its strength and at the end of five days its recovery is complete. M. Quinton has injected into animals a quantity of sea water greater than their own body weight without any toxic effects, whereas an injection of pure water rapidly brings about death. Sea water then appears to be the true nutrient fluid of animals, their natural plasma, in fact. M. Perrier, who introduced M. Quinton's paper to the meeting, did not fail to point out to what recondite philosophical theories these facts might lead.

April 12th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The International Congress of School Hygiene.[1]

THE First International Congress of School Hygiene was held in Nuremberg from April 4th to 9th, under the honorary presidency of Prince Ludwig Ferdinand of Bavaria, M.D., Professor Griesbach of Strasburg acting as chairman. There was a very large attendance of medical men and educationists, the number of members being not less than 1130. They came not only from Germany but also from most countries of Europe, from Japan, and from the United States. Apart from the general meetings, the Congress was divided into 11 sections—namely: (1) School Buildings; (2) Hygiene of Residential Schools; (3) Methods of Hygienic Investigation in Schools; (4) Physiology and Psychology of Educational Work; (5) Instruction in Hygiene for Teachers and Pupils; (6) Games and Drill; (7) Medical Supervision of Schools; (8) Special Schools or Classes; (9) Hygiene of Children out of School; (10) Hygiene of the Teaching Profession; and (11) General Hygiene in its Relation to Schools. After the inaugural proceedings the first paper was read by Professor Hermann Cohn of Breslau, the well-known ophthalmic surgeon. He took for his subject the Hygiene of the Eyes and alluded to inquiries conducted by himself 40 years ago when he examined the eyes of 10,000 school children and found myopia to increase coincidently with over-exertion of the eyes in school so that the worst vision was to be found in the most advanced classes.—Of the foreign delegates Professor Johannessen (Christiania) read a report on School Hygiene in Norway. Some parts of Norway were so thinly populated that 10 per cent. of the children had to walk more than four kilometres (two and a half miles) to the nearest school. Nevertheless, medical officers were appointed to all Norwegian schools and medical women for the girls' schools. The teachers received instruction in hygiene from the medical officers. With regard to Christiania, the capital of Norway, he said that of the 19 municipal schools 17 were provided with bathing arrangements and 29 per cent. of the children received meals in the schools free of charge.—Dr. Le Gendre (Paris) read a paper on the Ill-health of Teachers in its Relation to the Pupils. He drew attention especially to tuberculosis and recommended that candidates for teaching appointments should undergo a careful medical examination so that those who were actually or possibly tuberculous might not be employed in teaching.—A great many other papers were read before the Congress, among which several were of medical interest. Professor Hueppe (Prague) spoke on Infectious Diseases in their Relation to Schools; Dr. Leubuscher (Meiningen) and Dr. Hartmann (Berlin) on the Duties of Medical Officers to Schools; Dr. James Kerr (London) on School Ventilation; Dr. Schmidt (Bonn) on Games and Physical Exercises; and Dr. Flachs on Dress Reform for Girls. It was announced that the next international congress on this subject would be held in London under the presidency of Sir Lauder Brunton.

[1] An account of this Congress from our Special Correspondent will be found on p. 1072.

Health of the German Navy.

A statistical report on the health of the navy during the period from April, 1899, to Sept. 30th, 1901, has recently been issued by the medical department of the Imperial Naval Office. The report states that the health of the naval forces has continued to improve from year to year since 1879. The proportion of men reported sick was 745 per 1000 in 1900 and 690 per 1000 in 1901; the daily number under medical care was 57·5 per 1000 in 1900 and 35 per 1000 in 1901. On an average each patient was under treatment for 17·8 days in 1899 and for 18·6 days in 1900, the respective numbers for some other navies being 15 1 days for the British, 20 4 for the Austrian, 11·1 for the American, and 9·4 for the French navy. The health conditions were very unsatisfactory on board the vessels of the East African squadron where malaria prevailed and in the German settlement at Kiao-Chau in China where an epidemic of enteric fever and dysentery had broken out. The mortality of the navy has somewhat increased of late years, the death-rate being 3·2 per 1000 during the period 1897–99 and 4·2 per 1000 during the above-mentioned period 1899–1901.

The Belitz Sanatorium for Tuberculosis.

The Berlin association for insurance against sickness under the workmen's insurance law (Landes-Versicherungs-Anstalt) has erected a large sanatorium for tuberculous patients at Belitz in the neighbourhood of Berlin. This sanatorium, which is a model of its kind, is situated in a forest district and is provided with every requisite for the treatment of the patients. It contains bed-rooms, day-rooms, a dining hall, shelters for Liege-kur, and various departments for hydrotherapeutic treatment and other purposes. Although intended for patients belonging to the working class exclusively the arrangements are in every respect so good that they could hardly fail to be appreciated by patients of much higher social position. No charges have to be paid by the individuals undergoing treatment; all expenses are defrayed by the above-mentioned association, the only condition being that the disease is in a curable stage. The object aimed at in providing sanatorium treatment is to prevent working men and women from becoming permanent invalids, as in that case under the insurance laws the association would have to maintain them for the remainder of their lives. The sanatorium was opened on July 15th, 1902, for males and on August 11th for females and the report which was issued some weeks ago states that the male department was full on August 7th and the female department on August 21st. There are 180 beds for men and 72 for women. Of the patients admitted 70 per cent. were in the first stage, 25 per cent. were in the second stage, and 5 per cent. were in the third stage of pulmonary tuberculosis. In 11 per cent. pyrexia was present on the day of admission; in 14 per cent. tubercle bacilli were found. The results of the treatment were excellent: 94 per cent. were able to resume work and 40 per cent. did not show any symptoms of tuberculosis when they left the sanatorium. The patients increased in weight during their stay in the sanatorium, the average gain of weight being 6·6 kilogrammes for men and 5·3 kilogrammes for women. The treatment, apart from liberal nourishment, consisted chiefly of hydrotherapeutics and Liege-kur. No injections of tuberculin were given. It was observed that the improvement in health was generally much slower in women than in men. The average length of residence was 12 weeks. A number of the men left the sanatorium on finding that the loss of their earnings was a serious matter for those dependent on them. From the point of view of the institution this was unfortunate, because if these premature discharges could have been avoided the results would have been still better. It must be remembered that this sanatorium is not the only one carried on by the Workmen's Insurance Association. Its institutions include one for chronic, non-tuberculous diseases, also in Belitz; one for venereal diseases in Lichtenberg; one at Gütergotz for tuberculous patients in a more advanced stage; and some other smaller ones. As already mentioned, the object of these establishments, which have become a permanent feature in social hygiene, is to preserve as much as possible the insured workmen from becoming chronic invalids whose maintenance would be very costly.

April 12th.

EGYPT.

(FROM OUR OWN CORRESPONDENT.)

Renewal of Plague.

IN addition to the rinderpest, which has been absorbing all the energies of the Sanitary Department for the last nine months, human plague has now reappeared in Upper Egypt after so long an interval that it seems probable that it must have been reintroduced from abroad. The pilgrims now returning from Mecca are officially said to be free from plague and cholera and as yet no cause for this new outbreak has been found. History has again repeated itself, for it seems certain that the disease was kept concealed for some time before it was discovered by the sanitary officers. Barefaced concealment of infectious disease still continues in all the villages attacked, and cases are eventually found in houses which had been carefully searched a day or two before. Plague was found this time on March 5th in some small hamlets on the edge of the desert opposite the town of Girgheh and it is believed that four deaths which occurred prior to that date must have been due to plague. Altogether about 200 people have already been attacked and of these some 180 have died, the first known case being that of a man who died in his village five days after returning from Assiout where he had been called as a witness in the law courts. The high mortality is due to the fact that the disease is taking the pneumonic form, eight persons out of a family of 11 having died in one house and four deaths occurred in another household of five people. Cases of plague have also occurred in the little town of Tahta where for some days there has been a marked mortality among the rats. Additional reports have been received from some villages in Keneh province on both sides of the Nile; from one of these a man accompanied by his wife and three sisters went across the Nile to attend a relative's funeral. Three days later the man, his wife, two of these sisters, and two other sisters had all died from plague. Since then other cases have occurred in the same village but all have been confined to the family or neighbours of the original case. Major C. Garner, R.A.M.C., and a large staff have taken all the necessary precautions to try to prevent the spread of the disease but at this time of the year it is quite certain that it will spread in spite of all efforts. It is difficult to keep patience with the natives who obstruct legitimate and tactfully considered sanitary precautions, especially when dealing with villagers who suffered severely from plague only a year ago. Major Garner, for instance, suspected the existence of plague at the village of Naknak but on inspection could find no cases there. Yet on the following day the wife of the sheikh of the village died and on the next day the niece of the sheikh and two other people were found plague-stricken in the village. There can be no doubt that these cases were purposely hidden during the house-to-house inspection and nothing short of severe punishment will prevent similar occurrences in other places. It will take many a long year to change the habits of the Egyptian rustics who do not in the least believe in the necessity of cleanliness and disinfection, who imagine that all illnesses come from an evil spirit, and that the Government officials are all their hereditary enemies. If the many problems of endemic disease are ever to be attacked seriously in Egypt the staff of English inspectors must be considerably increased. At present all the time of the staff is taken up in combating epidemics and, unfortunately, for some years to come the supply of native medical men will not equal the demand. A further case of plague has now been reported from Suez in a man who had just returned from Port Said.

Kasr-el-Ainy Hospital.

This hospital and the medical school in connexion with it are progressing satisfactorily every year. Electric lighting is now being provided for the wards and the administrative offices and a new laundry has been built which will be worked by electric power. The in-patients have increased in number to 1000 more than in previous years and the out-patients number 66,000 annually, of whom 35,000 are new cases. The entry of students last October was 36, being more than at any time since the old days when youths were brought by force to the Government schools. A micro-photograph room has been opened and also an additional room for the physiological laboratory. Mr. G. L. Crimp has been temporarily engaged for pathological work during the absence of Dr. W. St. Clair Symmers at the serum institute for cattle plague, and Dr. G. Elliot Smith has also been given an English assistant for anthropological work.

Obituary Notice.

Captain H. E. Haymes, R.A.M.C., of the Soudan Civil Administration, died in the Soudan on March 15th. His death is not only deeply regretted by his many friends but it is a very serious loss to the Government. After a distinguished career at St. Thomas's Hospital he took resident appointments at the Royal Berkshire Hospital, Reading, and the Eastern Counties Asylum, Colchester, and soon after entering the Royal Army Medical Corps he applied for service in the Egyptian army. He first came to the front while in surgical charge of the wounded dervishes after the capture of the Khalifa at the end of 1899 and for his services on that occasion he was admitted to the Order of St. John of Jerusalem. In November, 1900, he accompanied Lieutenant-Colonel Sparkes, C.M.G., on a tour, which eventually lasted 18 months, in the Bahr el Gazzal province, and they travelled together all through the Niam-niam country, where Haymes's skill in surgical operations spread far and wide and did much to pacify the wild tribes to whom England's power was unknown. His medical and sanitary work were alike excellent and he had in addition the rare gift of administrative ability which marked him out very strongly for future employment as head of a province. He was a very good all-round sportsman and a splendid big game shot. He also went with Major Hunter on a punitive expedition in the Rumbek district, where he was wounded in the hand by a spear. He was specially decorated by H.H. the Khedive for his valuable services and then returned to Cairo to repair his own health after many attacks of malaria. Soon disdaining the delights of polo and smart society he volunteered to return to the Bahr el Gazzal where he was given both administrative and medical duties and while serving there he was again selected to accompany a small military patrol. The patrol was fired at by some ignorant villlagers and unfortunately Haymes was slightly wounded in the head. The climate is a very bad one for surgical injuries; his previous hardships had doubtless weakened his constitution and pyæmia including a septic abscess of the lung resulted, causing death in 13 days. He was universally beloved by his fellow officers and friends and he won the hearts of all the natives by his exceptional qualities of just, upright, brave, straightforward common sense.

Cairo, April 3rd.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

A Bill to Remodel the Medical Department of the United States Army.

A BILL has been introduced recently into the Senate and House of Representatives of the United States framed with the view of bringing about important changes in the Army Medical Service. According to the Surgeon-General of the United States Army the Medical Department at present suffers from three serious defects of organisation which handicap its efficiency in time of peace and render impossible any efficient expansion in time of war. These are: a commissioned *personnel* entirely inadequate to perform the medical service of the army even in time of peace; insufficient inducement in the way of pay and promotion to attract the most desirable class of young physicians to enter the corps; and no satisfactory means of expansion to meet war conditions and special needs in time of peace. The only means of expansion heretofore existing, the employment of contract surgeons to supplement the insufficient commissioned *personnel*, has always been wasteful and unsatisfactory and has now become absolutely unpractical because of the recent decision that the contract surgeon not being an officer obedience to his orders cannot be enforced even in the case of the enlisted men of the hospital corps. The organisations necessary to remove these defects are briefly as follows. The medical department to consist of medical corps and medical reserve corps. Medical corps.—1. Size: (*a*) sufficient to form an adequate nucleus in time of war, and (*b*) sufficient to do all ordinary duty in time of peace. 2. Grades: (*a*) to offer

sufficient emoluments to induce efficient men to enter the corps; (*b*) to officer properly the war nucleus; and (*c*) to officer properly and to administer in time of peace. Medical reserve corps to be drawn from medical men in civil life.—1. Size: (*a*) to meet unusual demands in time of peace, epidemics, care of troops at small stations, examination of recruits at unimportant places, &c.; (*b*) to increase medical department to proper size to meet demands in insurrections and small wars where increase in upper (administrative) grades is not necessary and where volunteer troops are not called out. 2. Grades: to have commissioned grade in order to meet adequately requirements of military service.

The Sanitary Condition of the Isthmus of Panama.

Dr. J. C. Perry of the United States Public Health and Marine Hospital Service has been at Colon and the Isthmus of Panama by the command of President Roosevelt, making investigations into the sanitary condition of the canal. Dr. Perry has submitted an exhaustive preliminary report to the Surgeon General to the Public Health and Marine Hospital Service. The writer finds malarial fevers in all forms the chief bane of the locality, but yellow fever, tuberculosis, and rheumatism are more or less prevalent. He finds the sanitary conditions in Colon and Panama extremely bad and along the railway road the state of affairs in this respect is even worse. The death-rate of Colon is high. Statistics compiled give an annual death-rate of 47 per 1000, but taking into consideration that these are probably incomplete he thinks that the mortality is not less than 50 per 1000. He considers that the natives are not so immune as is generally thought to be the case, although, of course, they have acquired a considerable degree of immunity. The rainy season at Colon and in the immediate vicinity lasts from May to January, the rainfall during that period averaging about 125 inches, which is twice the precipitation at Panama. Along the line of railroad between the two cities are 18 villages, with a population of about 15,000, almost exclusively negroes and Chinese. The sanitary condition of these places is wretched in the extreme. As to what extent the prevailing diseases can be diminished or prevented by proper sanitary equipment and regulations Dr. Perry says: "Having shown that 75 per cent. of the diseases are malarial; yellow fever exists and will increase upon introduction of new material; that dysentery, tuberculosis, and rheumatism are common, I think that a conservative estimate would be that 80 per cent. or even more of these diseases could be prevented." 75 per cent of the population of Colon consists of Jamaican or other negroes and Dr. Perry is of the opinion that to make it a clean city will necessitate the destruction of all the shanties which they now inhabit and their replacement by dwellings built on good sanitary principles. The conditions are much the same in Panama, which, Dr. Perry says, can be made a healthy tropical city by the introduction of a modern sewerage system and a good water-supply.

Paper Money as a Means of Carrying Infectious Germs.

Dr. Thomas Darlington, health commissioner of the city of New York, has pointed out the dangers liable to result from the use of coins and of dirty paper money, based upon the investigations of Dr. William H. Park, head of the Bureau of Research in the Department. The report made by Dr. Park was to the effect that experiments upon coins demonstrated that the metals produced a deleterious effect upon bacteria, so that within 48 hours they were usually free from disease bacteria. He further reported that the investigations so far have established the fact that bacteria are not killed by any substance in paper money but remain alive until time and drying destroy them. No actual disease bacteria have as yet been demonstrated. The report is only preliminary; experiments are still going on and will be continued for some time.

April 2nd.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

The Bubonic Plague.

BUBONIC plague has broken out again in Queensland. Five cases have been reported from Brisbane. Three cases were unofficially stated to have occurred at Cairns but on further investigation one proved not to be plague. Dr. B. B. Ham, the health commissioner, has had to object to irresponsible statements being made to the press as to suspicious cases of illness. The Board of Public Health in Victoria has forwarded a circular to all the municipalities in that State requesting that steps should be taken to destroy all rats as a precaution against plague. During the last quarter of 1903 29,000 rats were destroyed, but only about six municipal bodies have concerned themselves in the matter.

Typhoid Fever in Victoria.

Typhoid fever has increased in prevalence in Victoria this season. The returns for the fortnight ending Feb. 27th showed 225 cases, with ten deaths, as against 138 cases during the corresponding period of 1903. The increase was especially marked in the Bendigo district. The Board of Health is inquiring into the condition of the cases in the suburbs of Melbourne, especially as to their relations to milk-supply, and a report is being prepared. 75 cases of typhoid fever are under treatment at the Melbourne Hospital.

Prevention and Treatment of Tuberculosis.

The Victorian Society for the Prevention of Tuberculosis has prepared a leaflet dealing with the proper disinfection of houses after their occupation by consumptives. It recommends the burning of wearing apparel, pillows, and mattresses, the repapering of rooms and ceilings, and the washing of floors and furniture with disinfectants. The leaflet has been forwarded to the press with a request for publication and also to municipal councils. The latter have been asked to instruct their health officers to insist on proper disinfection and ventilation of houses. The committee of the Austin Hospital has called for tenders for the erection of the Kronheimer wing for consumptives but the residents in the neighbourhood are still agitating against its erection and the Premier declines to give a maintenance grant to the institution. A meeting was recently held in Melbourne of the subscribers to the Victorian Sanatorium for Consumptives, which has recently been incorporated under the Hospitals and Charities Act, to adopt by-laws and to appoint staffs for the management of the sanatorium. The objects of the institution were stated to be "the prevention and cure of tuberculosis (*a*) by treating persons who are labouring under such an incipient form of disease as to afford a reasonable hope of their obtaining benefit from a temporary residence in a suitable climate; (*b*) by treating persons who, being convalescent, require further medical treatment and change of air to re-establish their health; (*c*) by treating persons who may be in such other conditions as the institution in any general meeting may consider it advisable to treat; and (*d*) by such wider or other means as the institution may think fit to adopt." Under By law 17 power was given to the committee of management "to appoint and dismiss medical and other officers, whether honorary or otherwise." An amendment that the honorary medical officers might be elected by the subscribers was rejected. The following were appointed honorary medical officers: Consulting physician: Mr. D. Turner. Medical examiners: Melbourne, Dr S Bird, Dr. R. H. Strong, and Dr. Turner; Echuca, Dr. R. Bindon Stoney; Eaglehawk, Dr. B. S. Cowen; Bendigo, Mr. C. Burke Gaffney; Warrnambool, Dr. M'Knight.

Friendly Societies' Institutes and the Medical Profession.

Reference has previously been made to differences existing between the Balmain United Friendly Societies Dispensary and the New South Wales branch of the British Medical Association. The dispensary used to have four medical officers to whom the sum of £1320 per annum was paid in the following manner. Each medical officer was paid a monthly salary at the rate of £150 per annum and the remaining £720 were divided into 12 parts of £60, allotted to the officers according to the number of prescriptions issued by each. The medical officers were allowed a guinea for confinements and the right of private practice. The dispensary has 3500 members, and the amounts paid to the surgeons averaged about 7*s.* 6*d.* a member. The New South Wales branch of the British Medical Association thought that the payment was too little and at its instigation the four medical officers demanded payment *per capita* at the rate of 16*s.* per member per annum, practically the same rates as those received by the local lodge surgeons before the dispensary was established. The dispensary board of managers declined to adopt the system and two of its four medical officers resigned. The British Medical Association Council then declared the dispensary "inimical to the interests of the medical profession" in the terms of No. 36 of its Articles of

association, which means that no member of the New South Wales branch of the British Medical Association can hold the position of medical officer to the dispensary, or meet the medical officers in consultation. The dispensary board then decided to appoint three medical officers at a fixed salary of £450 per annum each, and advertised the positions. A number of applications were received and Dr. P. J. Kelly, Dr. Ellen Wood, and Dr. M. J. Cortis were appointed. The two first named were previously medical officers to the dispensary. Dr. Kelly was also a candidate for the position of paid medical officer to the Balmain Hospital and when the election by the hospital committee came on it was pointed out that if Dr. Kelly were appointed the honorary medical staff of the hospital would not meet him or work with him. The committee appointed Dr. Kelly.—In Bendigo, Victoria, a somewhat similar difficulty occurred. The United Friendly Societies' Institute had some difference with one of its medical officers who resigned. The Victorian Medical Defence Association issued a circular to the profession pointing out the conditions of the contract between the institute and its medical officers and warning medical men not to apply for the position on much the same grounds as those taken by the British Medical Association in New South Wales as to the Balmain Dispensary, chiefly that the annual salary, £450 per annum, to each of the two medical officers for attending to 2362 members and their families was too low and much below the *per capita* rate ruling in the district. The Medical Defence Association had previously passed a resolution to the following effect:—

> That it is contrary to the interests of the medical profession that medical men should accept office in friendly societies' institutes where the aggregate salary averages per member less than the rate paid in the district.

The medical men practising in Bendigo held a meeting and passed the following resolution:—

> That we agree not to meet in consultation the medical officers of the Bendigo Medical Institute so long as the rule (No. 7 in the resolutions of the Medical Defence Association) bearing on the salaries of their officers is not complied with. (Rule 7 is the resolution above quoted.)

22 medical men applied for the position at Bendigo, but after the issue of the circular of the Medical Defence Association five of them withdrew. Dr. T. O. F. Alsop was appointed.

March 4th.

Obituary.

JOSEPH MAY, F.R.C.S. ENG., L.S.A., J.P.,

CONSULTING SURGEON TO THE ROYAL ALBERT HOSPITAL, DEVONPORT.

Mr. Joseph May died at his residence, 1, Nelson-gardens, Stoke, Devonport, on April 10th, in his ninety-seventh year. Mr. May, who was born in Devonport, was articled to Mr. Tripe, a surgeon of Devonport, and received his medical education at St. Bartholomew's Hospital and the Aldersgate-street School of Medicine. In 1830 he took the qualifications of M.R.C.S. Eng. and L.S.A. Mr. May then studied his profession in Paris and in 1831 offered his services to the Polish army, then fighting against Russia and was appointed chief surgeon to the Nyazdowa Hospital. He then joined the army at Warsaw and was present at the siege of that town. After its surrender Mr. May returned to England, having been awarded the decoration of the Cross of the Polish Order of Stanislaus. In 1832 he commenced practice at Devonport and was appointed honorary surgeon to the Devonport and Stonehouse Public Dispensary which was eventually merged into the Royal Albert Hospital. Mr. May always took a prominent part in municipal matters; he had been an alderman for many years and four times filled the mayoral chair. He was presented with a magnificent candelabra and his portrait in oils as a recognition of his devoted labours in connexion with the opening of the Plymouth Devonport, and South-Western Junction Railway in 1876. Mr. May was for 20 years on the School Board and for 12 years occupied the position of chairman. He took a great interest in all matters connected with education and was for many years vice-chairman of the Devonport Girls' High School. He was a justice of the peace. In 1899 he was presented with the freedom of the borough of Devonport. He leaves a widow and two sons, both members of the medical profession, one being the medical officer of health of Devonport, the other Colonel W. A. May, C.B., D.S.O., R.A.M.C., and three daughters. Mr. May will be greatly missed in Devonport, where he was held in the very highest esteem, and by his death the medical profession loses a member of whom it may well be said that he was in every sense of the words a credit and an ornament.

WALTER WINTER WALTER, M.R.C.S. ENG., L.S.A.

Mr. Walter Winter Walter of Stoke-sub-Hambden, Somerset, died on April 1st in his seventy-ninth year. The deceased, who took the qualifications of M.R.C.S. Eng. and L.S.A. in 1846 and 1848 respectively, had practised for many years at Stoke. He was a former president of the West Somerset branch of the British Medical Association. Mr. Walter in his younger days was an active member of the Somerset Archæological Society and his collection of antiquities, which was one of the finest in the West of England, was presented by him a few years ago to the County Museum at Taunton where they are known as the "Walter Collection." The deceased, whose wife predeceased him by a few days, was buried on April 5th in the churchyard of Stoke. He leaves a son who is a member of the medical profession.

DANIEL MOUNCEY ATKINSON, L.R.C.P., L.R.C.S.EDIN., L.F.P.S. GLASG.

Mr. D. M. Atkinson, who died recently in Glasgow, was well known among the younger practitioners of that city and the position he had already attained led his many friends to consider his prospects as of the brightest. He was born in Yorkshire, being the son of a medical man in practice at Ferry Bridge near Pontefract. He received his medical education in Glasgow at Anderson's College and at St. Mungo's College, the medical school in connexion with the Royal Infirmary, where he gained medals in the classes of clinical medicine and operative surgery. Not long after becoming qualified in 1895 he resolved to settle in Glasgow and for some years he had been assistant to the professor of clinical medicine in St. Mungo's College. Mr. Atkinson, who was 49 years of age at the time of his death, possessed a considerable collection of coins and jewellery which had descended to him as a family heritage.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At the primary examination held recently the following candidates passed in the subjects indicated:—

PART I.

Biology.—G. F. C. Harvey, London Hospital; and E. A. Mordaunt, Royal Free Hospital.
Chemistry.—D. M. Hunt, London Hospital; E. A. Mordaunt and I. Pulteney, Royal Free Hospital; R. Rowlands, Glasgow; C. S. Spencer, Manchester; and M. V. Webb, Royal Free Hospital.
Materia Medica and Pharmacy.—J. C. Fletcher, Royal Free Hospital; and G. P. K. Grey, Middlesex Hospital.

PART II.

Anatomy.—I. R. Fearn and J. W. Featherstone, Guy's Hospital; T. S. Harrison, Manchester; R. J. W. McKane and A. W. C. Miller, Leeds; P. B. O'Dowd, Birmingham; H. V. White, Manchester; F. H. P. Wills, St. Mary's Hospital; and R. P. Wylde, Manchester.
Physiology.—A. C. Dickson and I. R. Fearn, Guy's Hospital; J. C. Fletcher, Royal Free Hospital; J. W. Featherstone, Guy's Hospital; W. J. G. Gayton, London Hospital; T. S. Harrison, Manchester; A. W. C. Miller, Leeds; F. B. O'Dowd, Birmingham; H. V. White, Manchester; and F. H. P. Wills, St. Mary's Hospital.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the recent quarterly examinations of the Scottish Conjoint Medical Board, held in Edinburgh, the following candidates were successful:—

First Examination.—Zerk Daniel Lotter-Luther, Cape Colony; Andrew Johnstone, Edinburgh (with distinction); Cecil Berry, Wigan; Charles Kinsley Carroll, India; Thomas Mohan, Ascint, Ireland (with distinction); Maria Shepherd Allen, Cheadle; Daniel Johannes Joubert, Stellenbosch; Michael Joseph Hayes, Rosscarberry; Cornelius Alexander O'Driscoll, County Cork; Edward John Lumsden, County Wexford; Graham Smith, Ashbourne; Easton Spence Shiach, Dunfermline; and Jacobus du Toit Malan, Cape Colony.

Second Examination.—Archibald McKendrick, Kirkcaldy (with distinction); Edward Albert Williams, Chester (with distinction); Harold Hubert Babington, Ireland; James Haig Johnston, Carnbee (with distinction); Ronald Wingrave Duncan, Edinburgh; Wilfrid Metcalfe Chambers, Knock, County Down; Arthur Patrick O'Connell, Sangor, India; Joseph Benjamin Norman Raphael Tom, Trinidad; Howard Douglas Stewart, London; Krishnaji Waman Dani, Poona; John Theodore Anderson, Victoria; Douglas Llewellyn George Radford, Leith; Herbert Moncrieff Sturrock, Edinburgh; Herbert Charles Orrin, Colchester; Thomas Wrenn Faulkner, Cooma; and Lakshmi Narayan Ghosh, Lucknow.

Third Examination.—William Wallace Dunlop, Edinburgh (with distinction); James Wilson, Edinburgh (with distinction); Henry Traill Simpson, Leith (with distinction); George Augustus Stewart Hamilton, Dublin; David James Melville Legge, Dundee; Henry Albert Pascoe, Natal (with distinction); Thomas McLaren Galloway, Sinclairtown (with distinction); William Fleming, County Durham; and John Edmund Cox, Hastings.

Final Examination (and admitted Licentiates of the three Cooperating Authorities).—Alford Rogers, Burry Port; Andrew Sergeant McNeil, Preston; John Alexander Tolmie, Ontario; Marian Theresa Pool, London; John Clegg Pickup, Burnley; William Douglas Yuille, Melbourne; Harry Andrew Foy, Cawnpore; Phirozshaw Cooverji Bharucha, India; Edmund O'Shaughnessy, co. Cork; Abdul Hakim Khan, India; Cunamal Santdas Thadani, Hyderabad; John Cretin, Mauritius; Dora Mann, Elsenberg; Edwin Nelson Jan, Ceylon; Chauncey Eugene Coke, Ontario; Herbert James George, Jamaica; William Thomas Clark, Ontario; George William Armstrong, Wales; Arthur Charles Lodge La Frenais, Madras; and David John Lewis, Newcastle.

UNIVERSITY OF GLASGOW.—The following have passed the first professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (B., Botany; Z., Zoology; P., Physics; and C., Chemistry):—

Archibald Aitchison (Z.), John Andrew Aitken (P.), William Allan (C.), David Anderson (Z.), William Anderson (B., P.), Thomas Archibald (Z., C.), James Currie Auchencloss (B., Z., P.), William Barr (Z.), Frank Beaton (B.), Charles Bennett (Z., C.), Robert Inglis Binning (B., P.), John Blakely (Z.), John Lindsay Boyd (Z.,* C.), William Brown, M.A. (B.), William Barrie Brownlie (Z., C.), David Young Buchanan (Z.), Murdo Buchanan (Z.), Hector Mackay Calder (P.), John Cameron (Z., P.), James Carrick (Z., C.), Donald James Clark (Z.), John Humphrey James Victor Coats (B.), James Cook (Partick), (Z., C.), John Cruickshank (Z., C.*), Walter Dawson (P.,* C.), James Cowie Dick (B.), William Hunter Duncan (B.), James Kirkwood Dunlop (P.,* C.), Allan Dunsmuir (C.), Thomas Loudon Fleming (B.), Thomas Forsyth (B.), William Leonard Forsyth (Z., C.), John Fotheringham (Z.), Berkeley Gale (C.*), David Gibson (Z., C.), Walter Gilmour (Z., C.), Hugh MacVicar Gossman (B.,* P.), Alexander Thomas Arthur Gourlay (B., P.,* C.), Edward O'Driscoll Graham (P.), Thomas Edmondstone Gray (Z.,* C.), William Cooper Gunn (P.), Josiah Stranaghan Harbinson (B., Z., P.,* C.), Stephen John Henry (Z., C.), James Hall Hislop (Z., P.), William Alexander Hislop (P., C.), Archibald Hogg (B.,* C.), Benjamin Hutchison (Z.,* C.), Alexander Mills Kennedy (Z., C.), Thomas Joseph Kirk (Z.), John Lang (Z.), William Leitch (B., Z., P., C.), Daniel Conway M'Ardle (B., C.), Peter Cunningham M'Arthur, M.A. (B.*), Frank Crombie Macaulay (Z.), Hugh M'Callum (Z., P.), Robert M'Carlie (P.), Alexander Macphail Macdonald (Z.), Alexander Campbell MacDougall (B., P.*), Joseph Bogue Mackay (B., P., C.), William M'Kendrick (P., C.), Francis William Mackichan (B., P.*), William Campbell Mackie (Z., C.), William Edward M'Lelland (C.), James Walter M'Leod (Z., C.), James M'Millan M'Millan (Z., P.,* C.), John MacMillan (B., P.), Peter Russell M'Naught (Z.,* C.), Donald Irvine M'Naughtan (B., P., C.), Allan M'Pherson (Z., P.), William Aubrey Layard Marriott (Z., C.), Frank Needham Marsh (Z., C.), Horatio Matthews (C.), Kenneth Chisholm Middlemiss (Z., C.), Thomas Miller (Z.), Robert M'Kenzie Morison, M.A. (B.,* Z., C.), Hugh Morton (C.), James Muir (Z., P., C.), Robert Charles Muir (P.), William Aikman Muir (Z., P.*), Archibald Campbell Munro (Z.,* C.), Arthur Alexander Murison (P.), Charles Sutherland M'Kay Murison (B., C.), Archibald Naismith (P., C.), Watson Noble (Z., C.), Albert Rutherford Paterson, (Z.,* C.), Adam Patrick (B., Z.), Ralph Montgomery Fullarton Picken (Z.*), David Purdie (Z., C.), Murray Purvis (Z., C.), Edward Quigley (Z., P.*), Richard Rae (Z.), Nicol M'Nicoll Rankin (B., Z.), Thomas David Coulthard Ross (B., P.*), George Waugh Scott (P., C.), Allan Semple (B., P.*), William Alexander Sewell (Z., C.), James Brown Sim (Z., P.*), William Stevenson (P., C.), Lawrence Storey (C.), Hugh Cochrane Storrie (Z., P.,* C.), David Taylor (Z., C.), Walter Telfer (P., C.), John Archibald Thomson (B., P., C.), John Sheiden Thomson (Z., C.), Robert M'Nair Walker (Z., C.), William Samuel Waterhouse (P.), Tom Paul Watson (B.), Thomas Charles Dalrymple Watt (C.), Charles Percival Williamson (Z., P.*), David M'Gruther Wilson (Z., C.), Hugh Mundle Wilson (B., P.,* C.), and William Alexander Wilson (B., C.).

Women.—Martha Maclean Buchan (P., C.), Margaret Baird Sproul Darroch (B., Z.), Mabel Foley (P.,* C.), Margaret Gardiner Forrest (B.,* P., C.), Jeanie Walker Jones (P., C.), Annie M'Crorie (B.), Janet Annie Mac ea (Z.), Flora Morrison (P.), Jeannie Peden Rose (B., Z.), Winifred Margaret Ross (P.), Jessie Capie Russell (P.,* C.), and Jeanie Hinshaw Stewart (P.,* C.).

The following have passed the second professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (A., Anatomy; P., Physiology; and M., Materia Medica and Therapeuti·s):—

George Victor Anderson (A., M.), James Montgomery Anderson (M.), Andrew Hamilton Arnott (P., M.), John Bain, M.A. (A.), Thomas Barbour, B.Sc. (A., P.), Charles Burns (P.), William Archibald Campbell (A., P., M.), Donald Livingston Carmichael (P., M.), Henry Howard Christie (A., P., M.), Donald Clark (M.), John Sawers Clark, M.A. (A., P.), James Coutts (A., P., M.), Andrew Donaldson Cowan (A., M.), Thomas Lawson Craig (A., P.), Arthur Muir Crawford (A., P., M.), Weir Burns Cunningham (A., P.), Harold Windley Dempster (P., M.), Allan Campbell Douglas (M.), Richard John Driscoll (M.), James Dunbar (A.), Ernest Milne Eaton (A., P.), Thomas Henderson Forrest (M.), James Wilfred Georgeson (P.), William Gilbert (A., P., M.), William Gilchrist (A.), Arnold Harris Gray (A., P.), John Isdale Greig, M.A. (M.), Robert Neil Guthrie (A., P., M.), John Hammond (A., P.), William Towers Hardie (A.) Robert M'Cowan Hill (A.*), Lawrence Hislop (M.), David Guthrie Hunter, M.A. (M.), Harry Stewart Hutchison (M.), Arnold Ernest Jones (A., M.), Percy James Kelly (A.), John Keys (A., P.), James Dunlop Kidd (A., P.), Robert Wright Leckie (A.), Alexander Leggat (A.), Alexander M'Call (P.), John M'Cartney (M.), David MacDonald (A., P., M.), James M'Farlane (A., P., M.), John Henry M'Kay (A., P., M.), Thomas Cooper Mackenzie (P.), William Ferguson Mackenzie (A., P., M.), William Macleod (A.), Norman Smith MacNaughtan (A.), Alister Argyle Campbell M'Neill (A., P.), Charles James Colquhoun Macquarie (A., P.,* M.), William Hislop Manson, M.A. (M.), Robert Marshall (A., P.), Robert May (A.), John Miller (A., P., M.), William Miller (A., P.), Peter Mitchell, M.A. (A.,* P.*); Hugh Walker Moir (A., P., M.), Patrick Joseph O'Hare (A.), John Oswald (P.), James Hogg Paul (A., P.), Arthur Geoghegan Paxton (P.), John Reid (M.), Frederick Gordon Robertson (A., P., M.), John Cooper Russell, M.A. (M.), William James Rutherfurd (A., P.,* M.), Alfred Cecil Sharp (A.,* P.*), John Sharp (A., P., M.), James Charles Donaldson Simpson (P., M.), Robert Alexander Slater (A.), William Smellie (A., P.), Thomas Baillie Smith (A., P., M.), James Stevenson (A., P.), John Stevenson (A., P.), Arthur Anderson Stewart (A.), David Laurence Alexander Tate (A.,* P.,* M.*), Charles Samson Thomson (A., P., M.), Martin Turnbull (P.), Alexander MacMillan Watson (A.), James Kennedy Welsh (A., P., M.), David John Williams (M.), George Haswell Wilson (A., P., M.), Moses Youdelevitz (A., P.), and John Young (Mount Vernon), (A.).

Women.—Jeannie Montgomery Andrew (A., P.), Rose Isobel Hudson (A., P., M.), Katharine Robina Margaret Lucas (A.), Agnes Picken, M.A. (A., P., M.), Harriett Rowland Louise Reid (A., M.), Vera Dagmar Reis (P.), and Margaret Baillie Taylor (P., M.).

Old Regulations.—Mr. Robert Stewart M'Kim, M.A., has passed the second professional examination (Anatomy and *Physiology) for the degrees of M.B. and C.M.

The following have passed the third professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (P., Pathology; and M., Medical Jurisprudence and Public Health):—

George Allison Allan (P.), William Smith Allan (P., M.), Andrew Allison (P., M.), Andrew Woodroffe Anderson (M.), James Henderson Baird, B.A. (P., M.), Hugh Barr (P., M.), George Duncan Morrison Beaton (P., M.), John Miller Hopkins Caldwell (M.), Thomas Murdoch Campbell, M.A. (P., M.), Charles Game Angus Chislett (M.), Robert Wilson Dale, M.A. (P., M.), Robert Scott Dewar, M.A. (P., M.), Walter Duffy, M.A. (P., M.), John Shaw Dunn, M.A. (P.*), Eric John Dyke (P., M.), Hamilton William Dyke (P., M.), James Fairley (P., M.), Harry Prescot Fairlie (P., M.), Alexander Burns Ferguson (P., M.), George Garry (M.), James Gemmell (P.), Joseph Glaister (P., M.*), Alexander Graham, B.Sc. (P., M.), William Grier (P.*), Charles Francis Dyer Hammond (M.), James Duncan Hart (P.), Frank Hauxwell (P.), James Waugh Hay (P., M.*), Ralph Vincent Howell (M.), Alexander Hunter (M.), James Hunter (P.), William Boyd Jack (P., M.), George Notman Kirkwood (P.), William Love Kirkwood (P., M.), George Hugh Logan (P., M.), Peter Lowe, M.A., B.Sc. (P., M.*), John Bertram M'Cabe (P.), Thomas M'Cosh (P.), Walter George Macdonald, M.A. (P., M.), Duncan M'Ewan (P.), Hugh Allan Macewen (P., M.), James Denniston Macfie (P., M.), John Macintyre (M.), Ronald Mackinnon (M.), Roderick MacLeod (P.), Matthew Thompson Drummond M'Murrich (P., M.), Hugh MacNaught (P.), Peter Maguire (P., M.), William Main (P., M.), John Moffatt (P., M.), William Struthers Moore (P., M.*), Henry Joseph Milligan (M.), David Robertson Mitchell (P.), John Dunn Nisbet (M.), John Pearson (P.), Henry Sherwood Ranken (P., M.), Cunison Deans Rankin (P., M.), Thomas Hood Rankin (M.), Thomas Thomson Rankin (P.), James Mill Renton (P., M.*), Arthur Robertson (P., M.), William Rolland (P.*), Campbell Ross (P.), John Macdonald Ross (P.), Alexander Cappie Russell (P., M.*), Edward Louis Augustin Sieger (M.), William Hermann Sieger (P.), James Alexander Somerville (M.), Thomas Straiu (P., M.), William Alexander Stuart (P., M.*), John Taylor (P., M.), Thomas Thom (P.*), William Lind Walker, M.A. (P.), Alexander MacMillan Watson (M.), and George Young (P., M.).

Women.—Bethia Shanks Alexander (M.), Jeannie Thomson Clark (P.), Mary Theresa Gallagher (P., M.), Elizabeth Maud M'Vail (P.), Charlotte Reid Park (M.), and Mary Spence (M.).

* Passed with distinction in the subjects indicated.

UNIVERSITY OF ABERDEEN.—The following degrees and diploma have been conferred:—

Honorary Degree of Doctor of Laws (LL.D.).—Charles James Cullingworth, M.D., St. Thomas's Hospital, London.

Degree of Doctor of Science (D.Sc.).—Andrew Norman Meldrum, B.Sc.

Degree of Bachelor of Science (B.Sc.).—John Foubister, M.A., Orkney; William Wilson Fyvie Aberdeen; John Gray, M.A., Forgue; Ian Quiller Orchardson, London; and William Slessor Simpson, M.A., Newburgh.

Degree of Doctor of Medicine (M.D.).—Thomas Barrett Hegge, M.B., Ch.B., Brighton; Charles Hunter, M.A., M.B., Ch.B., London; *Robert Donald Keith, M.A., M.B., Ch.B., London; Ronald Cadell Macdonald, M.B., C.M., Linlithgow (under Old Regulations); and Alexander Reid, M.B., C.M., Bradford (under Old Regulations).

* Thesis considered worthy of "Honours."

Degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.).—*With First-class Honours:* †James Clark, Sorn, Ayrshire.

With Second-class Honours: Francis Hernaman-Johnson, Aberdeen, and ‡Archer Irvine-Fortescue, Aberdeen. *Ordinary Degrees*: George Adam, M.A., Aberdeen; Francis Anderson, Gamrie, Banffshire; William Beedie, Gamrie, Banffshire; Alexander Dyce Davidson, M.A., Aberdeen; Francis William Davidson, London; Alexander Duguid, M.A., Aberdeen; James Farquhar, M.A., Aberdeen; Alexander Flett, Aberdeen; James Alexander Gibb, Udny, Aberdeenshire; James Smith Gray, M.A., Drumlithie, Kincardineshire; John Dunlop Henderson, Aberdeen; John Hunter, Aberdeen; Alexander Hutchison, M.A., Aberdeen; Herbert Mather Jamieson, Aberdeen; Neil Kennedy, M.A., Inverness; William Wilfrid James Lawson, West Bromwich; Donald McKay, M.A., Dufftown; Malcolm MacLeod, Stornoway; Charles Grant Macmahon, Aberdeen; W. Martin McPherson, Newburgh, Aberdeenshire; Alexander McRobbie, Aberdeen; Archibald Douglas Pringle, Bedford, Cape Colony, South Africa; James Robertson, Aberdeen; Alexander Nicholas Ross, Fearn, Ross-shire; Bertie Ronald Gordon Russell, Orkney; Herbert William Black Ruxton, Ellon, Aberdeenshire; William Alexander Smith, Cruden, Aberdeenshire; and ‡William Wood, Peterhead.

Degrees of Bachelor of Medicine (M.B.) and Master in Surgery (C.M.) (Old Regulations).—Alexander Smith Cardno, M.A., Fraserburgh

† Passed Final Examination with "Much Distinction."

‡ Passed Final Examination with "Distinction."

Diploma in Public Health.—Edward James Bruce, M.B., Ch.B. Aberd., Insch; John Macdonald, M.B., C.M. Edin., Inverness; George Mitchell, M.B., Ch.B. Aberd., Aberdeen; William Robinson Pirie, M.B., Ch.B. Aberd., Nairn; Cornelius Agnew Suvoong, M.A., M.B., Ch.B. Aberd., Shanghai; and Alexander Watt, M.B., Ch.B. Aberd., Cabrach.

MEDICAL MAGISTRATE.—Mr. J. E. Panton, M.D. Durh., M.R.C.S. Eng., has been appointed a justice of the peace for Bolton.

UNIVERSITY OF OXFORD.—The Vice-Chancellor has nominated Mr. Arthur Thomson, M.A., Exeter College, Professor of Human Anatomy, to act during the absence of the Regius Professor of Medicine as his deputy.—The Board of the Faculty of Medicine gives notice that it has approved the examination in Group C (3) of the Final Pass School as an examination in physics.

CHILDREN'S COUNTRY HOLIDAY FUND.—The annual meeting of the supporters of this fund will be held at the Hôtel Métropole, London, on Thursday, April 28th, at 3.30 in the afternoon. H.R.H. the Duchess of Albany has promised to preside. The speakers will be Mrs. E. Garrett Anderson, M.D., Mr. William Crooks, the Lord Bishop of Kensington, Mr. W. Pett Ridge, M.P., and Mr. I. Zangwill.

DONATIONS AND BEQUESTS.—Mr. J. Earley Cook has by his will left legacies in reversion after Mrs. Cook's death or remarriage to the Metropolitan Convalescent Institution, £1000; to the London Hospital, £2000, with a present annuity of £60; to St. Thomas's Hospital, £200; to Bolingbroke Hospital, £100; to the Earlswood Asylum, £500; to All Saints' Convalescent Hospital, Eastbourne, £300; to the Seaside Convalescent Hospital, Seaford, £200; to the Deaf and Dumb Asylum, Old Kent-road, £200; to the Indigent Blind School, Southwark, £200; and to the Margate Infirmary, £200.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The election of examiners will be held on Tuesday, May 3rd, as follows:—Two examiners in anatomy, four in surgery, two in physiology and histology, one examiner in pathology and bacteriology, one in pathology, one in midwifery and gynæcology, one in biology, two examiners in ophthalmology, one examiner in sanitary law and vital statistics, two examiners in chemistry and physics, two in dental surgery and pathology, and two in mechanical dentistry. Candidates are requested to lodge their applications in writing with the Registrar, at the College, on or before Tuesday, April 26th, at 10 A.M.

MEDICO-PSYCHOLOGICAL ASSOCIATION.—The spring meeting of the South-Eastern division of the Medico-Psychological Association will be held at the West Ham Borough Asylum, Goodmayes, Ilford, Essex, on April 29th. An inspection of the asylum and grounds will be made from 12 noon to 1.30 P.M., when the members of the association will take lunch with Dr. D. Hunter, the medical superintendent. During the afternoon Dr. F. W. Mott will give a lantern demonstration on the Significance of the Convolutional Pattern of the Human Brain, and Dr. D. G. Thomson will read a paper on the Nursing Bill from the Mental Nursing Point of View. Members will subsequently dine at the Café Monico, Piccadilly-circus, London, W. Dinner tickets, price 5*s.* each, can be obtained from the honorary secretary, Herts County Asylum, Hill End, St. Albans.

DEATH OF A CENTENARIAN.—It is announced that Mr. Alexander Alves, who died at Spalding on April 10th, was born in Edinburgh on Oct. 5th, 1803, and was therefore in his 101st year. He left Scotland when 23 years of age and for some years lived at Walthamstow, near London. He afterwards was employed as a bailiff and head gardener at Chislehurst in Kent until he was nearly 80 years of age.

PRESENTATION TO A MEDICAL PRACTITIONER.—Mr. Sidney C. Lawrence, M.R.C.S. Eng., L.R.C.P. Lond., D.P.H., lecturer and examiner of the St. John Ambulance Association and honorary surgeon to the Earls Barton division of that Association, has been presented with a pair of opera glasses as some acknowledgment of the valuable assistance which he has given to the cause of first aid and nursing at Earls Barton during the past seven years.

THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—An entertainment has been arranged by Mrs. Edgar Speyer and Mrs. Carl Derenburg in aid of the nervous diseases research fund of the National Hospital for the Paralysed and Epileptic and will be given at the Æolian Hall, New Bond-street, London, W., on Friday, April 29th, at 9 P.M. The programme will consist of the Bach sonata for violin and pianoforte in B minor, Brahm's sonata for violin and pianoforte in A major, Brahm's pianoforte solo, and the César Franck sonata for violin and pianoforte. The entertainment is under the patronage of Her Royal Highness the Duchess of Albany.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Local Government Board: Medical Department.

THE estimates of the expenditure on the medical department of the Local Government Board have now been prepared. There is an increase of £324 in salaries, which now amount to £11,923, and an increase of £133 has been provided for in the National Vaccine Establishment, but the total sum asked for is considerably less than a year ago owing to reductions under the head of incidental expenses in the Vaccine Establishment. As was the case last year £1900 are asked for in respect of the auxiliary scientific investigation concerning the causes and processes of disease.

The Disposal of Sewage.

The following statement on the work of the Royal Commission on the Disposal of Sewage has been issued along with the estimate of the expenditure which will be incurred during the ensuing year: "This Commission was appointed in May, 1898, and on July 12th, 1901, they issued an interim report. On July 7th, 1902, they issued a second report, presenting reports on certain chemical and bacteriological investigations in relation to sewage disposal which had been made under the direction of the Commission. On March 2nd, 1903, the Commission presented a third report dealing with trade effluents and the setting up of rivers boards and a central authority for the purpose of settling disputes between manufacturers and local authorities and for the better protection of rivers and other waters. On Dec. 28th, 1903, the Commission presented a fourth report dealing with the dissemination of disease by means of contaminated shell-fish and other evils caused by the discharge of unpurified sewage and trade effluents into tidal waters. This report contains the recommendations of the Commission for remedying these evils. The Commission have also presented with this report reports by their own officers on bacteriological examinations of shell-fish and sea water, on land treatment of sewage, and on methods of chemical analysis, together with other reports. The systematic investigation of a number of artificial processes of purifying sewage for the purpose of ascertaining their relative value in different circumstances is still in progress. The Commission have not been appointed for any definite period and it is impossible to state with any degree of precision when they will be in a position to make a final report on the questions submitted to them. It may, however, again be pointed out that some of the questions can only be properly determined after careful and prolonged scientific research."

BOOKS, ETC., RECEIVED.

BELL AND BRADFUTE, 12, Bank-street, Edinburgh. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.)

A Clinical Handbook of Urine Analysis. By Charles H. Bedford, D.Sc., M.D. Edin., Professor of Chemistry, Calcutta Medical College. Price 6*s.* 6*d.* net.

BERGMANN, J. F., Wiesbaden. (F. BAUERMEISTER, 49, Gordon-street, Glasgow.)

Die Psychischen Zwangserscheinungen. Auf klinischer Grundlage dargestellt von Dr. L. Loewenfeld, Specialarzt für Nervenkrankheiten in München. Price M.13.60, or 13s. 9d.

Ueber Natürliche und Künstliche Säuglingsernährung. Von Dr. Karl Oppenheimer, Kinderarzt in München. Price Pf.80, or 1s.

Lehrbuch der Geschlechtskrankheiten. Von Prof. Dr. Eduard Lang, K.K. Primararzt im Allgemeinen Krankenhause in Wien. Price M.10.40, or 10s. 6d.

Praktischer Leitfaden der qualitativen und quantitativen Harnanalyse (nebst Analyse des Magensaftes). Für Aerzte, Apotheker, und Chemiker. Von Dr. Sigmund Frankel, Dozent für Medizinische Chemie an der Wiener Universität. Price M.2.40, or 2s. 6d.

Handbuch der Geburtshülfe. In drei Bänden herausgegeben von F. von Winckel in München. Erster Band, II. Hälfte. Price M.14.40, or 15s. 9d.

Otitis Media der Säuglinge. Bakteriologische und Anatomische Studien. Von Dr. med. Hermann Pressing, Privatdozent an der Universität Leipzig. Price M.27, or £1 7s.

Atlas of Rare Ophthalmoscopic Conditions and Supplementary Plates to the Atlas of Ophthalmoscopy. By Hofrath Dr. J. Oeller, Professor in the University of Erlangen. Part II. (Printed in German and English). The text translated into English by Thos. Snowball, M.A., M.B. Aberd. Price M.8, or 8s.

DAVIDSON, F., 140, Great Portland-street, W.

Sight Testing for the General Practitioner. By F. Davidson. Third edition. Price 2s. 6d. net.

FISCHER, GUSTAV, Jena.

Experimentelle Untersuchungen zur Lehre von der Atrophie gelähmter Muskeln. Von Dr. Friedrich Jamin, Assistent an der Medizinischen Klinik. Price M.5.

Statistische Vergleichstabellen zur praktischen Koprologie bei heberlosen Patienten. Für Mediziner und Nahrungsmittelchemiker. Von Baron Dr. Oefele, praktischem Arzte für Diabetes und andere Stoffwechselkrankheiten, zur Zeit in Bad Neuenahr. Price M.4.

HARRISON AND SONS, 45, St. Martin's-lane, W.C.

International Catalogue of Scientific Literature. Second Annual Issue. R, Bacteriology. MS. completed May, 1903. 1903 (October). Price 21s.

International Catalogue of Scientific Literature. First Annual Issue. N, Zoology. Part I., Authors' Catalogue; Part II., Subject Catalogue. MS. completed August, 1903. Vol. XVII., Parts I. and II. (February), 1904. Price, complete in two parts, 37s. 6d.

HIRSCHWALD, AUGUST, Unter den Linden, 68, Berlin, N.W.

Sammlung Klinischer Abhandlungen über Pathologie und Therapie der Stoffwechsel- und Ernährungsstörungen. Herausgegeben von Professor Dr. Carl von Noorden, Oberarzt des Städtischen Krankenhauses in Frankfurt a.M. 5. Heft. Ueber den Einfluss der Kochsalzquellen (Kissingen, Homburg) auf den Stoffwechsel des Menschen. Von Dr. Carl Dapper (Bad Kissingen). Price M.1.20.

HODDER AND STOUGHTON, 27, Paternoster-row, E.C.

Ophthalmological Anatomy. With some Illustrative Cases. By J. Herbert Fisher, M.B., B.S. Lond., F.R.C.S Eng., Assistant Surgeon, Royal London Ophthalmic Hospital (Moorfields). Price 7s. 6d.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.

Pediatrics: the Hygienic and Medical Treatment of Children. By Thomas Morgan Rotch, M.D., Professor of Pediatrics, Harvard University. Fourth edition, re-arranged and rewritten. Price 25s. net.

KING, P. S., AND SON, 2 and 4, Great Smith-street, Victoria-street, Westminster, S.W.

London County Council. The Experimental Bacterial Treatment of London Sewage. Being an Account of the Experiments carried out by the London County Council between the Years 1892 and 1903. By Professor Frank Clowes, D.Sc. Lond., F.I.C., Chemist to the Council, and A. C. Houston, M.B., D.Sc. Price not stated.

LONGMANS, GREEN, AND CO., London, New York, and Bombay.

Religion and Science. By P. N. Waggett, M.A. Price 2s. 6d. net.

The Old Riddle and the Newest Answer. By John Gerard, S.J., F.L.S. Price 5s. net.

REDMAN, LIMITED, 129, Shaftesbury-avenue, W.C.

A System of Physiologic Therapeutics. Edited by Solomon Solis Cohen, A.M., M.D. Volume VII. Mechanotherapy and Physical Education, including Massage and Exercise, by John K. Mitchell, M.D., Fellow of the College of Physicians of Philadelphia; and Physical Education by Muscular Exercise, by Luther Halsey Gulick, M.D., Director of Physical Training in the Public Schools of Greater New York. With Special Chapters by James K. Young, M.D., H. Augustus Wilson, M.D., and Walter L. Pyle, M.D. Price 12s. 6d. net.

RICHARDS, GRANT, 48, Leicester-square, W.

The Confessions of a Physician. By "V. Veresaeff" (V. Smidovich). Translated from the Russian (with the Author's permission) by Simeon Linden. Price 7s. 6d.

SANITARY PUBLISHING COMPANY, 5, Fetter-lane, E.C.

Resumé, Historical and Practical, with Notes and Comments on the Subject of Sewage Disposal. By W. H. Knight, M.S.I., Author of "Diagrammettes." Price 6d.

SAUNDERS, W. B. & CO., 9, Henrietta-street, W.C.

Saunders' Year-book of Medicine and Surgery. Under the General Editorial Charge of George M. Gould, M.D. Vol. I., General Medicine. Vol. II., General Surgery. Price, per volume, 13s. net.

A Text-book of Legal Medicine and Toxicology. Edited by Frederick Peterson, M.D., President of the New York State Commission in Lunacy; Clinical Professor of Psychiatry, Columbia University; and Walter S. Haines, M.D., Professor of Chemistry, Pharmacy, and Toxicology in Rush Medical College, Chicago. Vol. II. Price 21s. net.

SCIENTIFIC PRESS, LIMITED, 28 and 29, Southampton-street, Strand, W.C.

The Sanatorium Treatment of Consumption. By T. N. Kelynack, M.D., M.R.C.P., Physician to the Mount Vernon Hospital for Consumption and Diseases of the Chest, Hampstead and Northwood, London. Price 6d. net.

Burdett's Hospitals and Charities. 1904. By Sir Henry Burdett, K.C.B. Price 5s. net.

SPOTTISWOODE AND CO., LIMITED, 54, Gracechurch-street, E.C.

The Medical Register. Printed and Published under the Direction of the General Council of Medical Education and Registration of the United Kingdom. 1904. Price 10s. 6d.

The Dentists' Register. Printed and Published under the Direction of the General Council of Medical Education and Registration of the United Kingdom. 1904. Price 3s. 4d.

THACKER AND CO., LIMITED, Bombay.

Legal Medicine (In India) and Toxicology. In two volumes. By Major Collis Barry, I.M.S., F.R.S.E., F.I.C., &c., Chemical Analyser to the Government of Bombay. Vol. I., second edition. Price not stated.

THE MEDICAL TIMES, LIMITED, 11, Adam-street, Strand, W.C.

Elementary Lectures on Errors of Refraction and their Correction. By Harold B. Grimsdale, M.B., B.C. Cantab., F.R.C.S., Assistant Ophthalmic Surgeon to St. George's Hospital. Price 2s. 6d.

Clinical Studies in Syphilis. By Arthur H. Ward, F.R.C.S. Eng., Surgeon to the London Lock Hospital, Clinical Assistant in the Dermatological Department of St. George's Hospital. Price 5s. 6d.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BOND, FRANCIS T., M.D. Lond., M.R.C.S., F.R.S. Edin., has been reappointed Medical Officer of Health to the Chipping Sodbury Rural District Council.

CARSBERG, A. E., M.B., B.C. Cantab., has been appointed Certifying Surgeon under the Factory Act for the Bruton District of the county of Somerset.

FRUMAN, W. T., M.D. Durh., F.R.C.S., L.R.C.P. Lond., has been appointed Senior Assistant Physician to the Royal Berkshire Hospital.

HIGHET, JOHN, M.D., C.M. Glasg., D.P.H., has been appointed Medical Officer to the Post-offices of Troon, Dundonald, and Symington.

HILL, P. E., M.R.C.S., L.S.A., has been appointed Medical Officer of Health for the Crickhowell Combined Districts.

MICHELL, JOHN CHARLES, M.R.C.S. Eng., L.S.A. Lond., has been reappointed Medical Officer of Health to the Lynton (Devon) Urban District Council.

OLIVER, F. HEWITT, L.R.C.P. Lond., L.S.A., has been appointed Surgeon-Accoucheur to the City of London Lying-in Hospital.

PRITCHARD, W. L., M.B., C.M. Edin., has been appointed Certifying Surgeon under the Factory Act for the Brynmawr District of the county of Brecon.

WILLIAMS, HENRIETTA L. D., M.B. Lond., has been appointed Senior Assistant Anæsthetist to the Royal Free Hospital, Gray's Inn-road, W.C.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRADFORD ROYAL INFIRMARY.—Dispensary Surgeon, unmarried. Salary £100 per annum, with board and residence.

BRIDGNORTH AND SOUTH SHROPSHIRE INFIRMARY.—House Surgeon. Salary £100, with board and lodging.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon. Salary £80, with board, lodging, and washing.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Pathologist. Salary £300 a year.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark.—House Physician. Also House Surgeon. Salary £80 respectively, with board, residence, and washing.

FIFE DISTRICT ASYLUM, Cupar-Fife.—Junior Assistant Medical Officer. Salary £100 per annum, with rooms, board, and attendance.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £20, with board and residence.

LEEDS HOSPITAL FOR WOMEN AND CHILDREN.—Resident House Surgeon for six months. Salary at rate of £80 per annum, with board.

MANCHESTER, ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN.—Medical Officer. Salary £65 per annum, with board and residence.

MARGARET-STREET HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, 26, Margaret-street, Cavendish-square, W.—Assistant Physician (honorary).

MARGATE, ROYAL SEA-BATHING HOSPITAL.—Resident Surgeon as Junior for six months and as Senior for a like period. Salary at rate of £80 and £120 per annum respectively, with board and residence.

METROPOLITAN ASYLUMS BOARD.—Senior Assistant Medical Officer (unmarried) for Asylum at Darenth, Dartford, Kent. Salary £250 per annum, rising to £300. Also Third Assistant Medical Officer (unmarried) for Asylum at Tooting Bec, Tooting, S.W.. Salary £150 per annum, rising to £170, both with rations, lodging, attendance, and washing.

MIDDLESEX HOSPITAL, W.—First, Second, and Third Assistants to the Director of the Cancer Research Laboratories. Salary of First Assistant £200 a year, of Second £150, and of Third £100.

NEWARK AND DISTRICT HOSPITAL, Notts.—House Surgeon, unmarried. Salary £50 per annum, with board, lodging, and laundry.

NORFOLK AND NORWICH HOSPITAL.—Assistant House Surgeon for six months. Honorarium £20, with board, lodging, and washing.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon. Salary £100, with board, lodging, and washing.

OXFORD, RADCLIFFE INFIRMARY.—Surgeon.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician, also House Surgeon, both for six months. Salary at rate of 50 guineas a year, with board and residence.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Examiners in Elementary Biology, Anatomy, Midwifery, and Public Health, under the Conjoint Examining Board in England; Examiners in Anatomy and Physiology for the Fellowship; and Two Members of the Court of Examiners.

ROYAL EYE HOSPITAL, Southwark, S.E.—House Surgeon for six months, renewable. Salary 50 guineas per annum, with board and residence. Also Clinical Assistants (honorary).

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—House Physician and Casualty House Surgeon, both for six months. No salary given, but board &c., provided.

ROYAL HALIFAX INFIRMARY.—Third House Surgeon, unmarried. Salary £80 per annum, with residence, board, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Third House Surgeon. Salary £50, with board and residence. Also three Refraction Assistants. Salary £25 a year, with lunch.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Clinical Assistants.

ST. HELENS, COUNTY BOROUGH OF.—Medical Officer of Health. Salary £450 per annum, rising to £525.

SEAMEN'S HOSPITAL SOCIETY (Dreadnought), Greenwich, S.E.—House Physician. Salary £65 per annum. Also Junior Resident Medical Officer. Salary £40 per annum. Both with board, residence, and washing.

SOUTH AFRICA, ROBBEN ISLAND LUNATIC AND LEPER ASYLUM.—Senior Medical Officer. Salary £600 per annum. Also Second Assistant Medical Officer. Salary £220, rising to £350.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Resident Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

TIVERTON, DEVONSHIRE, INFIRMARY AND DISPENSARY.—House Surgeon and Dispenser. Salary £80 and all found.

VICTORIA, AUSTRALIA.—Inspector-General of the Insane. Salary not to exceed £1500. Apply to the Agent-General for Victoria, 142, Queen Victoria-street, London, E.C.

WESTMINSTER GENERAL DISPENSARY.—Resident Medical Officer. Salary at rate of £120 per annum, with rooms, gas, coal, and attendance.

Births, Marriages, and Deaths.

BIRTHS.

FAGGE.—On April 6th, at St. Thomas's-street, London Bridge, S.E., the wife of C. H. Fagge, F.R.C.S., of a daughter.

HOFFMAN.—On April 10th, at Cotswold Lodge, Leamington, the wife of A. W. W. Hoffman, L.R.C.P., M.R.C.S., L.D.S., of a daughter.

KIRTON.—On Feb. 26th, the wife of Rex Gower Kirton, Esq., M.D., D.P.H., P.M.O., of the Prisons Department, Cairo, Egypt, of twins, boy and girl.

WELD.—On April 12th, at Shakespeare-road, Bedford, the wife of Captain Weld, R.A.M.C., of a son.

MARRIAGES.

KRAUS—RIX.—On April 10th, in Vienna, Dr. Fred. Kraus, jun., son of Dr. J. Kraus, sen., "Duke of Brabant" House, Carlsbad, Austria, to Flora, daughter of the late Herr Anton Rix, of Vienna.

LAWSON—CLARK.—On April 7th, at St. Andrew's Church, Hillingdon West, Arnold Lawson, F.R.C.S., of Harley-street, W., to Helen Hargraves, eldest daughter of Andrew Clark, of Harley-street, London, W., and Cowley-grove, Uxbridge.

DEATHS.

CHAMBERS.—On April 13th, at his residence, "The Lodge," Buckhurst Hill, Essex, and formerly of 249, Hackney-road, John Chambers, M.R.C.S., L.S.A., in his 90th year. Friends please accept this (the only) intimation.

SMYLY.—On April 8th, at his residence, Merrion-square, Dublin, Sir Philip Crampton Smyly, M.D.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A LOCUM-TENENT AND HIS PRINCIPAL.

To the Editors of THE LANCET.

SIRS,—Can you advise me how to act in the following circumstances? Being ill, I engaged a locum-tenent (A) with a view to purchase the practice or a share of it. Discovering after a time that A was not in a position to purchase, an assistantship was proposed. A making objection to signing the bond I put a stop to negotiations and gave him his *congé*. He had been with me nine weeks. Since then A has taken rooms in the neighbourhood and has continued to attend certain patients of mine on his own behalf, showing round a testimonial he had received (from a patient of mine) and stating that I was old and past work and inviting them in the circumstances to employ him. He has also given out that he has purchased half my practice and that he is doing all the work. Have I any redress? With apologies for troubling you,

I am, Sirs, yours faithfully,

BETA.

*"*_*" Our correspondent's only remedy is a legal one. If he can prove his allegations he would certainly also convict the locum-tenent of unprofessional conduct, but we doubt if the General Medical Council would regard the conduct as constituting "infamous conduct in a professional respect." A lawyer might, however, advise Beta that the publication of the testimonial in question was a libel. If Beta could convict Alpha of uttering a libel the unfair rivalry would not only cease but the General Medical Council would have a definite offence before it and might proceed to remove the offender from the Register.—ED. L.

HOLMAN TESTIMONIAL FUND.

A FURTHER list of contributions has been forwarded to us by the honorary treasurer of this fund, Dr. John H. Galton, Chunam, Sylvan-road, Norwood, London, S.E.:—

	£	s.	d.
Dr. J. Ford Anderson ...	1	1	0
Mr. E. Parker Young ...	1	1	0
Sir Anderson Critchett...	2	2	0
Surgeon-Major John Ince, I.M.S. (retired)	2	2	0
Dr. Frederic Bagshawe	2	2	0
Dr. P. H. Pye-Smith F.R.S.	2	2	0
Dr. H. Cooper Rose ...	1	1	0
Dr. Walter Rigden... ...	1	1	0
Dr. J. Dundas Grant ...	1	1	0
Lord Lister, O.M., F.R.S.	5	5	0
Dr. John Tanner	5	5	0
Dr. Philip Frank	2	2	0
Mr. A. G. Rogers	2	2	0
Mr. Edmund Owen ...	2	2	0
Dr. Charles Parsons ...	2	2	0
Dr. A. E. Sansom	2	2	0
Sir Dyce Duckworth ...	2	2	0
Mr. H. W. Kiallmark ...	1	1	0
Dr. W. A. Bralley	1	1	0
Mr. H. Langley Browne	1	1	0
Dr. J. Moorhead	1	1	0
Dr. J. Barr	1	1	0
Dr. Frank M. Pope... ...	1	1	0
Dr. F. W. Pavy, F.R.S.	2	2	0
Mrs. E. Garrett Anderson, M.D.	1	1	0
Dr. W. G. Vawdrey Lush	1	1	0
Dr. J. Gordon Black ...	1	1	0
Lord Richard Browne ...	2	2	0
Dr. F. Neild	2	2	0
Mr. A. Pearce Gould ...	2	2	0
Mr. A. A. Lipscombe ...	0	5	0
Dr. Thomas Eastes ...	2	2	0
Mr. George Eastes... ...	0	10	6
Mr. W. H. Roots	1	1	0
Dr. George Oliver	2	2	0
Sir B. Walter Foster, M.P.	1	1	0
Mr. Charles A. Aikin ...	5	5	0
Mr. W. H. May	3	3	0
Dr. G. R. F. Stilwell ...	0	10	6
Miss A. J. Wilkinson ...	1	1	0
Miss J. M. Wilkinson ...	1	1	0
Dr. Evan Jones, J.P. ...	1	1	0
Dr. Henry Barnes, J.P.	2	2	0
Dr. Charles Caldecott ...	1	1	0
Mr. Walter Whitehead...	1	1	0

Considering Dr. Holman's great public services to the medical profession there should be no difficulty in obtaining the sum necessary to commemorate his labours in a worthy manner.

THE INSTRA WARMER.

THE essential feature of this handy local warming apparatus is the material used in it for the maintenance of slow combustion. The warmer consists of a metal case into which a rod of fuel is placed which burns slowly, quietly, and safely, giving off a gentle heat. The combustion, though slow, is perfect, owing to the presence of an oxidising agent, and a clean white ash remains. There is no scintillation during the combustion nor does the ash escape through the interior space provided for the fuel. The apparatus is quite useful and effective when local warmth is desired, as for the hands or feet in cold weather. It may obviously have a number of applications and has been used for medical purposes. A specimen of the patent Instra Warmer was sent to us by Messrs. J. S. Barwick and Co., 6, Strand-on-the-Green, Chiswick, W.

THE FACTORY GIRLS' COUNTRY HOLIDAY FUND.

THE hygienic, educational, and social benefits which this admirably conducted fund confers annually upon some 2000 working girls of London are clearly set forth in the report of the fund for the year 1903 which has just been issued. We have several times urged the claims of this fund and pointed out the good which it does for the workers in our great metropolis and the effect which the health of these girls in the natural course of things may have upon the coming generation. The number of women and girls sent away during 1903 was 3600, an increase of 400 as compared with the figures for 1902. The amount contributed by the girls towards their

holidays in 1903 was £1013, as compared with £784 in the previous year. "Much as we should like all working people to be able to provide their own holiday," say the committee, "we do not feel justified in keeping hundreds of over-worked, and often sickly, girls waiting for years in London until their wages enabled them to pay the whole instead of part of the cost of the much-needed rest and change." Nevertheless, the fund waits and hopes for a day when its existence will have become unnecessary. In the meantime the most valuable part of its work is the quiet but effectual preparation and education of our working girls for the coming of that happy day. Subscriptions and donations should be sent to the honorary treasurer, Mrs. Bedford, St. Peter's Rectory, Saffron-hill, London, E.C. It may be pointed out that as arrangements for these holidays have to be made some time beforehand subscriptions sent early in the year are greatly valued by the committee.

DR. J. T. C. CONRY'S DEFENCE FUND.

To the Editors of THE LANCET.

SIRS,—Will you kindly insert the appended list of contributions to the above received since April 9th? Unfortunately, Dr. Conry was not a member of either of the Defence Associations and has consequently had to bear the whole of his costs unaided. The amount received to date represents only a small proportion of what he was called upon to pay. In this connexion may we quote from the kind letter of a contributor of 5s.? "As I think that in these cases small subscriptions (which all can afford) should be given by every man in practice to mark his support of a falsely accused brother I therefore enclose an order for the small amount of 5s. ..... I would suggest that in the letter which I presume you will send that you will emphasise this point of small but general subscriptions, as many who cannot afford their guineas are often deterred from sending amounts which look so paltry in a list of big subscriptions, but whose mite expresses as much sympathy as the bigger amount."

We are, Sirs, yours faithfully,

EDWIN T. ENSOR.
WALTER L. ROBERTS.

162, Ladbroke-grove, W., April 12th, 1904.

	£	s.	d.		£	s.	d.
Acknowledged	14	3	6	Dr. R. B. Gorsuch	0	5	0
Dr. F. de Havilland Hall	1	1	0	Dr. James Hamilton ...	0	5	0
Dr. A. R. Hamilton Bland	1	1	0				
Mr. R. M. Hugo	1	1	0	Total	18	17	6
Mr. John S. Crone	1	1	0				

A COOLING CUSHION.

WE have received from Messrs. Von Saal and Co., 9 and 10, Australian-avenue, E.C., a specimen of a cooling pad which it is said gives relief in certain kinds of headache and in sleeplessness and fatigue. The cushion consists of a pad containing a spongy material inclosed in a suitable case. On one side of the case is a waterproof sheet while the other side consists of chamois leather studded with several rows of metallic wires. The pad is dipped in cold water before application to the surface of the body, the wires coming into contact with the skin. On application a decided sensation of cold is experienced which in some instances may be useful in relieving certain local conditions. The pad is light and pliable and adaptable to any part of the body, and would seem to possess some of the advantages claimed for it. The metal bars or wires would appear to conduct the heat of the part to which the pad is applied to the moistened sponge where it dissipates. By this arrangement the cooling properties of the pad are assumed to last for some time during a single application.

UNAUTHORISED TESTIMONIAL.

To the Editor of THE LANCET.

SIR,—Last year you called attention to a testimonial purporting to be given by me in favour of "Dr. Whitefoords Pills." I wrote a repudiation of it at the time which possibly never reached you since I have not seen the contradiction of the authority for the "testimonial" in your columns. As I find that it is again being circulated will you allow me to clearly indicate that I have neither given nor authorised in any way such testimonial to anyone.

Truly yours,

1, Elm-court, Temple, E.C. H. S. SCHULTESS YOUNG.

*** In our issue of March 21st, 1903, we mentioned that a person named Whitefoord, whose case had been watched by Mr. Schultess Young in a case of procuring abortion (and who had been struck off the rolls of the medical profession for committing that very offence), was circulating a testimonial from Mr. Young to the merits of a quack pill. We received from Mr. Young no repudiation of the honour thrust upon him by his client. Three months later, in our issue of June 27th, we reported Mr. Young as defending Whitefoord on a charge of falsely pretending to be on the Medical Register, so that Mr. Young does not seem to have cherished any resentment against the circulator of the testimonial, although now, a year later, he asks us to publish a letter denying that he ever gave it.—ED. L.

A SERIOUS CHARGE.

A PERSON who was arrested at Southampton last week, and subsequently released upon a small bail, is said to possess medical qualifications but his name does not appear on the Medical Register. He is accused of having impersonated Mr. Charles Henry Cormac, whose address in the Medical Directory for 1903 was "uncommunicated," but who is included in the Medical Directory for 1904 in the list of Practitioners Resident Abroad. The accused, whose real name is given as Hurstwick, claims to hold qualifications gained in Glasgow and Heidelberg, and explains that he has signed a death certificate with Mr. Cormac's qualification derived from the Royal College of Physicians of Ireland through inadvertence. We suppose that we shall hear later if Mr. Cormac's name, as well as his diploma, has been assumed through carelessness and with no intent to deceive.

MEDICAL CERTIFICATES AND SCHOOL AUTHORITIES.

THE medical men of Rugby unanimously refuse to give medical certificates for children in case of their absence from school. On April 12th Mr. Busson was summoned at Rugby police-court for his child being absent from school. Mr. Thomas Johnston, the medical attendant, was subpœnaed on behalf of the defendant and on his evidence the case was dismissed with costs against the school authorities, Mr. Johnston being allowed a fee of 10s. 6d. We do not know what the relations between the medical men of Rugby and the school authorities of that town have been, but we presume from the fact that the medical men have decided to give no certificates that the school authority has acted in the same foolish way in which for some time the moribund London School Board used to do. We always advised London medical men never to give a certificate for a school board but to tell the parents of the child that they would attend the police-court if necessary. In several cases where this was done the school board failed to get a conviction and the same failure obtains, it would appear, at Rugby.

AN ILL-ADVISED BID FOR PRACTICE.

To the Editors of THE LANCET.

SIRS,—It has been suggested to me to send you the inclosed. It is a discredit that anyone with an English diploma should be permitted to issue such circulars.

I am, Sirs, yours faithfully,

H. WILLINGHAM GELL, M.A., M.B. Oxon., M.R.C.S. Eng.

Hyde Park-square, W., April 6th, 1904.

[INCLOSURE.]

6, Hertford-street, Mayfair, W., March 16th, 1904.

DEAR SIR,—I take the liberty of enclosing you one of my cards, believing that many members of the medical profession would be glad to learn of a dentist who practices *strictly* from "the standpoint of saving the natural teeth."

I may also add that I make a speciality of crowning, bridging and contour work generally, as well as treating all conditions of the mouth and teeth.

I shall be very pleased if at any time I can place my services at your disposal. I am, very sincerely,

To B. W. Gell, M.R.C.S. L. N. SEYMOUR, D.D.S., L.D.S. Eng.

*** Mr. L. N. Seymour, who has recently obtained a place on the English Dental Register, and who styles himself "American Dentist" on his card, is very ill-advised to intrude in this manner upon strangers.—ED. L.

THE LEOPARD SKIN.

WE have received a signed artist's proof of Mr. I. Snowman's picture, "The Leopard Skin," which was exhibited in the Royal Academy last year. The picture is the "bonus picture" which has just been issued to their clients by Bovril, Limited. Purchasers of Bovril receive coupons of face value varying with the size of the bottle purchased until coupons to the aggregate face value of a guinea have been accumulated when they can exchange them for a copy of the picture. The picture, it may be remembered, represented the various emotions aroused in a highly decorative group of children upon first being confronted with the new drawing-room hearthrug—a leopard skin, head, claws, and tusks complete. The reproduction has been carefully executed.

Touting for Patients.—The author of the communication bearing this title has not sent his address, his name is not legible, the rules of the medical aid association are not inclosed, and he offers no proof of the distribution to the patients of other medical men of the offending circulars. We can notice the matter if the omissions are rectified.

M.R.C.S.—Among the smaller and less expensive works are "Practical Methods of Urine Analysis" (London: The offices of the *Chemist and Druggist*), Dr. E. Gerard's "Traité des Urines" (Paris: Vigot Frères), and Dr. H. Aubrey Husband's "Examination of the Urine" (E. and S. Livingstone, 15, Teviot-place, Edinburgh).

D. B.—We do not prescribe either medicines or cosmetics for patients. Our correspondent's medical man can advise her as to whether she requires an eye-wash, and might be able to give an opinion as to the advisability of her bleaching her hair.

Anon.—We have no information of the stuff called "the priceless cure," but if our correspondent likes to send us some we will analyse it. The pamphlet shows the proprietor to be the usual quack.

Hope Deferred, who has not sent his name and address, should consult his medical man. The condition, though obstinate, is curable.

R. B. S.—We are unable to verify the quotation and our correspondent has omitted to mention what preparation is being advertised.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (18th).—London (2 P.M.), St. Bartholomew's (1.30 P.M., St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.).

WEDNESDAY (20th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (21st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (22nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (23rd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

TUESDAY 19th).—PATHOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8.30 P.M. Papers:—Dr. A. E. Wright: On the Value of Comparative Examinations of Blood and Urine.—Dr. Cantlie and Prof. Hewlett: The Bacteriological Findings in a Case of Climatic Bubo.—Dr. J. H. Horder: A Case of Pyocyaneus Pyæmia following Ear Disease.

CHELSEA CLINICAL SOCIETY (Chelsea Dispensary, Manor-street, King's-road, S.W.).—8.30 P.M. Communications: Sir Isambard Owen: A Case of General Atheroma in which an Aortic Aneurysm of which there was no Symptom was detected by Radioscopy, and in which a Malignant Ulcer of the Stomach also existed without symptom (with specimen). Dr. W. Ewart: A Demonstration of some of the Results obtainable by Percussion. Other Clinical matters.

WEDNESDAY (20th).—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Exhibition of Pond Life.

FRIDAY (22nd).—CLINICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Exhibition of Clinical Cases followed by Discussion. Patients will be in attendance from 8 P.M. to 9 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (18th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. Galloway: Clinique. (Skin). 5.15 P.M. Mr. B. G. A. Moynihan: Gall-stones and their Surgical Treatment.

TUESDAY (19th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. Taylor: Clinique. (Medical.) 5.15 P.M. Mr. J. Cantlie: Some Intestinal Ailments and their Treatment.

WEDNESDAY (20th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. H. L. Barnard: Clinique. (Surgical.) 5.15 P.M. Dr. D. Grant: Some Common Errors in the Diagnosis and Treatment of Diseases of the Nose.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Mr. R. P. Brooks: External Diseases of the Eye.

THURSDAY (21st).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Mr. J. Clarke: Circumcision.

FRIDAY (22nd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. N. MacLeod: Clinique. (Eye).

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 14th, 1904.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
April 8	29·94	S.W.	0·01	79	63	45	46	47	Raining
,, 9	29·90	W.	...	96	57	47	51	53	Raining
,, 10	30·00	W.	...	83	55	44	40	44	Cloudy
,, 11	30·05	WNW	...	97	58	40	42	46	Fine
,, 12	29·86	S.E.	.	103	62	45	46	50	Cloudy
,, 13	29·39	S.W.	0·15	103	59	50	53	54	Raining
,, 14	29·60	S.	...	110	65	47	51	53	Cloudy

During the week marked copies of the following newspapers have been received:—*Cork Constitution, Cork Examiner, Aberdeen Daily Journal, Aberdeen Free Press (Weekly), Westminster Gazette, Carlisle Journal, Dublin Evening Mail, Daily News, Surrey Advertiser, Bristol Mercury, Dublin Express, Morning Post, Sanitary Record, Local Government Chronicle, Mining Journal, Hertfordshire Mercury, Burton Chronicle, Army and Navy Gazette, The Tuam People (Ireland), Yorkshire Daily Observer,* &c.

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